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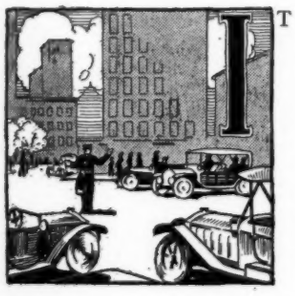
THE AUTOMOBILE

Guarding Against Automobile Accidents in Town and Country

Municipal Ordinances All Over the Country Are Approaching Uniformity Much More Rapidly Than Are State Laws—Many Unreasonable Provisions in the Local Laws Have Been Eliminated

Operators Should Exercise Caution in Approaching Schools, Churches, Corners, Crossings, Turns in The Road and Bridges—Quiet Driving a Necessity in City and Village Streets



IT is very encouraging to the automobilist who is planning a tour to look over the traffic regulations at present in force in the large cities all over the country, for in this respect, at least, uniform legislation is the rule. Some of the cities simply have cards containing the few directions necessary to an understanding of the important regulations, while others have exceedingly formidable-looking documents which are apparently designed to cover any contingency, but the essential features are the same in all. Before this desirable condition of things was attained the tourist was at a great disadvantage, as the ordinances of a large proportion of the towns and cities through which he passed differed widely in many important particulars. Now he has but one set of rules to learn in regard to driving on city streets and, moreover, has the satisfaction of feeling that he knows what is expected of him, no matter through what city he may be passing. A general summary of the rules adopted follows:

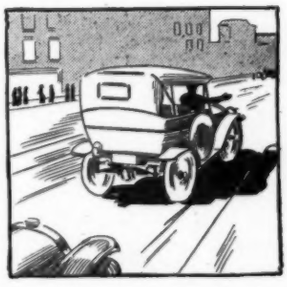
All vehicles shall keep to the right, except in passing another vehicle going in the same direction, when the overtaking car shall pass on the left side of the overtaken vehicle, as shown on page 1108, and not pull over to the right until entirely clear of it.

On an avenue or street divided longitudinally in any manner, vehicles shall keep to the right of such division.

A vehicle turning into another street to the right shall turn the corner as near the right hand curb as practicable, as in the diagram on page 1108. The rule that a vehicle turning into another street to the left shall pass the center of the street intersection before turning is illustrated in the same way.

When crossing the street, a vehicle shall keep to the right. The manner of performing this evolution is also shown in the diagram.

No vehicle shall stop with its left side to the curb except on such streets as may be designated one-way traffic streets.



No vehicle shall stop or stand within the intersection of any cross street, nor within 10 feet of any crosswalk or street crossing.

Drivers of vehicles shall pull to the right side of the street when signalled from a vehicle behind desiring to pass.

In slowing up or stopping, every driver shall signal those behind by raising the hand. The same signal shall be given before making a turn, the direction in which the turn is to be made being indicated.

Before backing ample warning shall be given and while backing care shall be exercised not to injure those behind.

A vehicle waiting at the curb shall immediately give place to a vehicle about to take on or let off passengers.

Due caution shall be exercised in approaching and passing street cars at all times.

Drivers shall at all times regulate the speed of vehicles with regard to the safety and comfort of others and shall at no time allow the vehicle to proceed at a speed greater than is reasonable and proper.

Drivers of vehicles must at all times comply with the directions of any member of the police department whether given by voice, hand or whistle.

A number of the cities make it a rule that no vehicle shall stand backed up to the curb.

One of the points upon which many of the cities differ is that of the type of warning signal to be used by automobiles. Some of the towns prohibit the sounding of any "gong, bell or other signal which produces a noise of an unusually loud, annoying or distressing character, or such as will frighten pedestrians or animals." Other cities specifically forbid the use of certain makes of horn. The aim of these cities is praiseworthy, but their ordi-

Muffler cut-outs are a nuisance in the city

nances leave the automobilist only the bulb horn as a means of warning of their approach. In some of the cities the rules stipulate that no horn, bell or gong may be used within the city limits except a hand-operated rubber bulb horn. All automobilists, and most of their friends, know the inadequacy of the bulb horn, especially in the din of city traffic or in approaching a cross street or a sharp corner where the road is hidden from view. Many of the municipalities, however, were blessed with officials who knew something about automobiling and realized the difference between traveling in a swift-moving, perfected piece of mechanism and jogging along in a buggy behind old Dobbin. In these cities the law requires an adequate signal, but directs that it shall be used only when necessary and not as a means of amusement.

There is no necessity for leaving the muffler open in the city and most of the cities forbid the use of muffler cut-outs inside the city limits. Of course, it is a great satisfaction to the average automobilist to "open it up" now and then and say to his friends: "Hear that? The engine has more power than when it was new," but he can do that in the country just as well as in the city and without creating a great deal of discomfort for other people. The amount of noise and dust that a car can make is not an indication of its value by any means. Many automobilists cherish the mistaken idea that the use of the muffler cut-out increases the available power of the engine and, consequently, the hill-climbing abilities of the car. The fallacy of this theory was effectually proved by the recent tests of the horsepower developed with and without the use of the muffler cut-out as published in THE AUTOMOBILE of April 11. These tests showed that the gain in horsepower through the use of the cut-out is so small as to be insignificant.

Another respect in which automobilists should always be considerate of the safety and comfort of others is the regulation of acetylene and electric headlights. The blinding glare which precedes a great many cars as they glide through the main streets of some of our large cities is a cause of much discomfort and even of danger to pedestrians and horse-drawn vehicles. It hurts the eyes, is startling and frightens horses. Of course, the driver puts the occupants of the car in an equally dangerous situation if he drives without headlights about side streets and in outlying sections which are inadequately lighted.

Headlights Are Easily Dimmed

When driving in the country the use of headlights is always necessary. This being the case, the automobilist should employ some device or expedient for reducing or dimming the glare of the headlights when in the city or on suburban streets which are adequately lighted. Certainly, the driver cannot stop the car, leave his seat and turn the lights on or off every time the car passes from an unlighted street to a brightly lighted one, or *vice versa*. The dimmed light is generally sufficient to make driving on a dark street safe without annoying other people. As soon as the city limits are passed, the headlights may be allowed to blaze forth again in all their glory and the automobilist can sit back with a sigh of relief and the tremendously satisfactory feeling of having done his duty. For reducing the glare of the lights, some drivers use yellow paper, applied in such a way that it cannot catch fire, or some other home-made device, while others buy an appliance.

One of the great aims of the city traffic regulations is, of course, the avoidance of confusion and blocking of the streets. Some of the cities require that vehicles shall go around the block instead of turning around in narrow streets which would probably be blocked by such a procedure. Most of the cities forbid turning a vehicle on the principal streets by backing. A number of them leave such matters to the automobilist, simply directing him to exercise care that he shall operate his car in such a manner that it will not interfere with traffic.

The majority of the large municipalities throughout the country have ordinances prohibiting the emission of smoke, sometimes qualified to "dense smoke," from automobile engines. It cannot be denied that it is far from agreeable for the pedestrian to have to breathe an oily vapor practically every time he or she crosses the street. Very often an over-lubricated engine will pour forth such clouds of blue vapor that it will fill the street for blocks, making it impossible for vehicles following it to proceed with comfort and sometimes even with safety. In most cases, there is no excuse for this.

The blinding glare of headlights is disagreeable

Excessive Lubrication Needless

Of course, when the car is new or the engine has just been overhauled, it ought to have plenty of oil, but there is no need for driving a car through the principal streets at such a time. The driver can go down a side street if it is absolutely necessary to run the car in the downtown section. By far the best plan is to take the car straight from the salesroom or repair shop to the country roads and run it about for a while until the engine has lost its stiffness to some extent. Outside the city the amount of smoke that will be exhausted will cause no discomfort.

Regard for the maintenance of pavements was the reason for many of the cities adopting ordinances which forbid the dripping of oil or gasoline on the streets. There is reason in this, the unsightliness of an oil-smeared pavement being another argument in favor of the regulation. It is a comparatively easy matter for the automobilist to keep his drip pan cleaned out, or, at least, to have it arranged in such a way that oil or grease will not drip from it when the car is either standing or in motion. There is no excuse for gasoline dripping from a car. At the first trace of it the automobilist knows that there is something wrong with either his pipe line or his carbureter and a leak from either comes to be rather expensive before long if not attended to at once. As for radiators boiling over, there is no law against

water on the street and the only embarrassment this is likely to cause the automobilist is an inquiry from his friends as to whether he has a contract with the street cleaning department, or if his car is a fire engine.

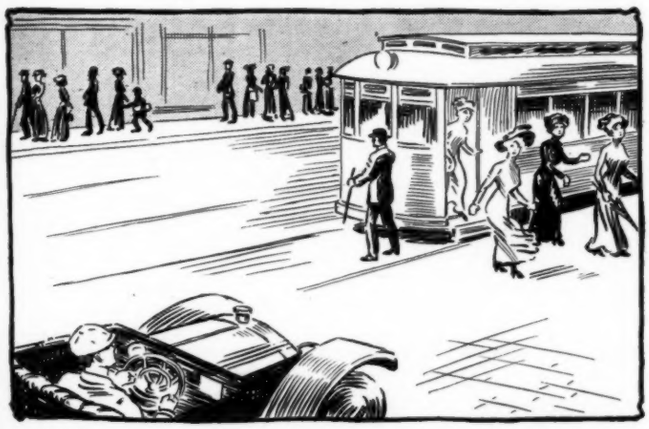
When approaching a schoolhouse, in either city or country, automobilists should exercise much more care than most of them do at the present time. So many accidents to children are due to negligence of automobile drivers in the vicinity of schools that the necessity for watchfulness and care cannot be emphasized too strongly. The same rule applies to driving near churches on Sunday and near other places where people congregate.

Another point upon which automobilists are none too considerate, as a rule, is in regard to making as little noise as possible when driving in the neighborhood of hospitals. These districts are usually designated as "hospital zones" and signs request the public to avoid making any unnecessary noise. These signs are very often disregarded by careless drivers who do not scruple to use their horns or even their muffler cut-outs in spite of the fact that the polite request of the sign is backed up by a city ordinance prohibiting useless clamor near hospitals.

Make Way for Public Vehicles

All of the cities have incorporated in their regulations a provision that ambulances, police patrols and all fire department vehicles shall have the right-of-way at all times and that, upon their approach, all other vehicles shall draw up close to the curb and stop, so as to preserve a clear space down the middle of the street throughout its length. This, of course, serves the double purpose of avoiding accidents and of facilitating the passage of these public vehicles.

Often, in the concentration of the automobilist on the mass of trolley cars, wagons, automobiles, carriages and pedestrians which fill the streets of our busy cities, he will forget that there



Care must be used in driving near street cars

are just as many things behind him as before him and that the drivers of the vehicles behind are trying to look out for him just as he is trying to look out for those in front. The new driver is particularly apt to forget his obligations in a situation of this kind and very often he does not know that he should always raise his hand, so that it can be plainly seen by the drivers of the vehicles following him, whenever he intends to stop, and that when he turns, he should indicate the direction in the same manner.

When about to back, even if only for a few feet, the driver should be exceedingly careful to ascertain that the way is clear. Generally, this is done by turning around in the driver's seat and giving a glance behind. This is hardly a satisfactory method to follow, however, especially if the top is up or if the car is of the closed type, as very often there is something behind the car which is not in sight from the driver's seat and which is likely to either damage the car or to be damaged, or both. The result is usually trouble for the automobilist, no matter how things turn out.

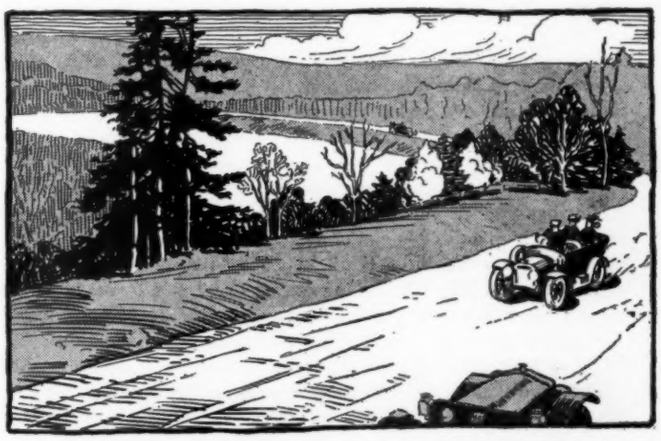
In city driving, one of the worst dangers, particularly for the novice at the wheel, is that of skidding on wet asphalt. Trolley tracks are especially treacherous and should always be avoided in wet weather or when there is water on the street. Broken asphalt and bumpy Belgian block or cobble-stones, so studiously shunned in fair weather, are to be welcomed under these conditions. Anyone who has once experienced the feeling of absolute helplessness which pervades the driver when he feels that the car is beyond his control is always very careful in such circumstances for he knows how likely it is that a collision or similar accident will result.

Some Useful Tips to Drivers

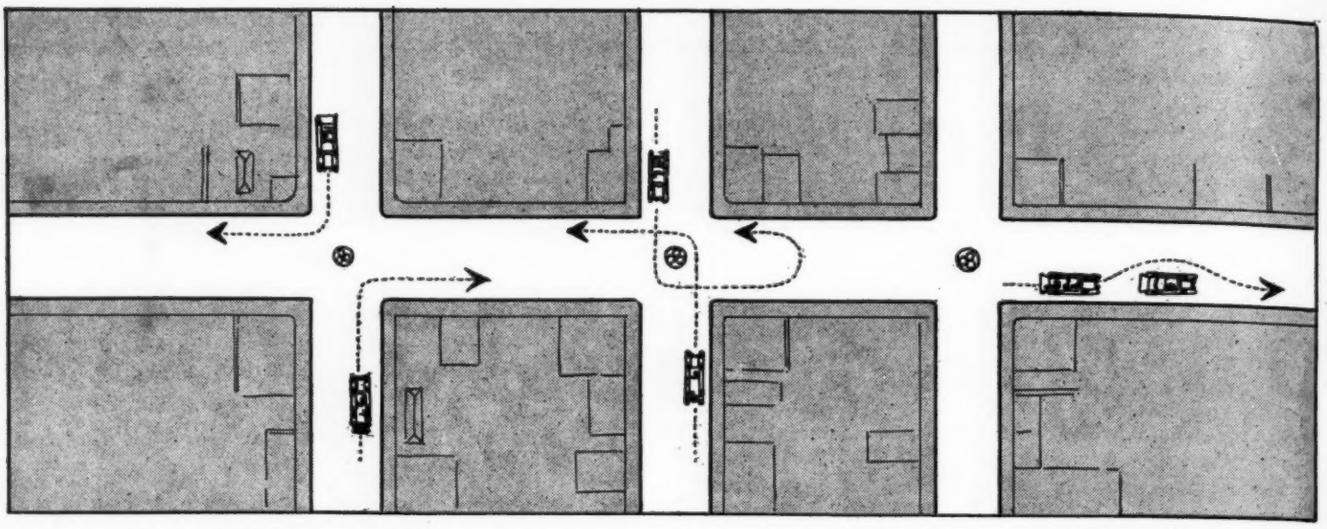
Of course, tire chains should be worn whenever possible on rainy days, and when these are not at hand, as, for instance, when out on a country road, a rope round the tires, or some similar expedient, often renders riding safer and more comfortable, especially for the driver. If the novice drives a car over slippery pavement without some of these protections he should be careful not to speed up the engine or slow it down suddenly as the result is apt to be disastrous. He should keep the front wheels as nearly as possible in a straight line and should be very careful in making turns of any sort. Also he should run slowly and never apply the brake suddenly. When about to perform any sort of maneuver on a wet street or road it is best to always throw out the clutch first. This is very effectual in decreasing the probability of accident. If the car does skid, a turn of the steering wheel in the direction in which the car is sliding often enables the driver to regain control.

Suddenly applying the brakes when the car is traveling at high speed is the cause of a great many bad accidents. The man who abruptly throws on his brakes at a speed of even 30 miles an hour is running a considerable risk, especially if the road is slippery. Even if they are applied gradually the driver should be exceedingly careful. But, in the first place, a driver should never travel at high speed on any road where it is likely that a sudden application of the brakes will be required.

On country roads, bridges are often dangerous to springs and sometimes to other parts of the car as the road is usually several inches lower than the floor of the bridge and the front wheels of the car come against the bridge with a heavy jar. The driver should always be on the look-out for bridges of this kind and keep the car well under control when approaching them. The best method to follow in "taking" them is to slow the car down considerably and then to swing the front wheels onto the bridge one at a time, that is, diagonally. It is nearly always possible to do this and it distributes the shock more evenly than is the case if the wheels are allowed to strike the bridge at the same time. If the bridge is wide enough, the sweep should be made in such a manner that the rear wheels also strike the bridge at an angle, but this is not as important as in the case of the front wheels, for the shock will not be as great, as the car will be traveling at a slower rate when the rear wheels reach the bridge.



Speed should be reduced and horn blown at curves



In turning into a street to the right, keep close to the curb. In turning into a street to the left, pass the center of the street intersection before turning. In passing a vehicle going in the same direction pass to the left of it

Many drivers shoot onto a bridge and even into a covered bridge as though they were coming in on the home stretch on a 200-mile race. This is exceedingly dangerous, to say the least. Some automobilists, instead of sounding their horns to such an extent that they are a nuisance, neglect to operate them at times when they are most needed. On small bridges such as are met with on country roads the road curves in such a way that the driver cannot see whether there is a car approaching from the opposite direction or not. In situations like this he should always take care to proceed slowly and to sound his horn to warn anyone who may be hidden from sight around the bend in the road. The same rule should be followed whenever the road is curved in a similar manner or when approaching a corner.

It is true that the roads of this country are not as well covered by systems of signs as they should be, but the automobile clubs are doing a great deal in this direction, as are many automobile trade organizations. The good roads movement which is progressing so rapidly will doubtless take up this work and carry it forward. Still, if automobilists would only exercise a reasonable amount of care in crossing railroad and trolley tracks there would be a great many less accidents. Signs have already been put up at the most dangerous places and a little watchfulness cannot fail to detect them.

At the present time there are far too many accidents resulting from negligence of such details of the science of driving as have been mentioned. There is no reason for such a condition of affairs and the automobile public is beginning to realize it. Increase in the number and frequency of accidents raises the insurance rates and thus the carelessness and thoughtlessness of some drivers bring consequences that fall upon all automobile owners who wish to insure their cars. And if these negligent drivers follow out the thread of events, they will find that, aside from accidents to their cars, themselves or someone else, their thoughtlessness will act as a boomerang, causing them much trouble and, perhaps, expense. A little care in driving proves well worth while.

Will Meet to Set Date for Classics

MILWAUKEE, WIS., May 14—Thursday night has been fixed upon as the time for the special meeting of the Milwaukee Automobile Dealers' Association to select the course over which the Vanderbilt Cup race and the Grand Prix will be run off in September. Two courses have been suggested and the choice between them is uncertain. In addition to deciding upon the course, the association will fix the date for each classic.

The western railroads have granted the application of the association for reduced trip rates covering the entire territory in the jurisdiction of the roads west of Denver common points.

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WASHINGTON, D. C., May 11.—The Automobile Club of Washington has applied for a sanction for a 3-days' reliability run in June and it is probable the contest will be run June 11, 12 and 13. It will be run under Grade 4 rules with the addition of the outdoor tests. The pathfinding car, a Cole, will leave June 2 to lay out the route, which will include Maryland and Pennsylvania. The night stops will be in Harrisburg and Philadelphia. The club has been assured of at least 25 entries.

The club's sociability run, originally scheduled for May 18, has been postponed till May 25. It is expected that at least 200 cars will participate.

Denver Preparing for Spring Meet

DENVER, COL., May 11—In order to break the long jump from Santa Monica to Indianapolis a number of the racers who have been performing on the California coast for the last few weeks will stop in Denver to give a series of exhibition races on the 18th and 19th at Overland Park. This will be the first opportunity that Denver motorists have had for a year to see any speed events and considerable interest is being manifested in the meeting. Except for a few local entries, the drivers and cars are widely known in the racing world. Louis Disbrow will give a time exhibition in the famous 290-horsepower Jay-Eye-See. Joe Nikernt will be here with the Case in which he finished second in the Santa Monica races. The Simplex and Fiat will also be seen. Ralph W. Smith, president of the Colorado Automobile Association, will act as referee. The program will consist of time trials with all cars and sprints and middle distance events.

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PHILADELPHIA, May 13—What is believed to be the first track pushmobile race ever conducted will be held at the Belmont Driving Park, Narberth, on Saturday, May 18. Prizes consist of two pushmobile racing cars, trophy cups, watches and medals. Six events are carded at distances ranging from 1 to 3 miles.

Splitdorf-Alvord Merger

Combination Will Be Effected Despite Embarrassment Caused by Premature Announcement

RUMORS circulated recently as to the projected merger of C. F. Splitdorf, Inc., with the Alvord group of industries, involving a deal of $3,500,000, are apparently well-founded. The deal, however, has not been formally consummated, having been embarrassed and obstructed by premature reports of the negotiations.

Sidney S. Meyers, attorney acting for both parties in a sense, announced Tuesday in reply to a question as to the fundamental fact of the reported merger, that it had not been closed. He said, upon being pressed, that there was an element of truth in the rumors, but would give no particulars.

The companies mentioned in the reports include the big ignition system and accessory factory of C. F. Splitdorf, Inc., located in New York; the Standard, Excelsior Needle and Torrington companies, located at Torrington, Conn., and the Eagle Company, of Newark, N. J. The Alvord concerns have been manufacturing spark-plugs.

John Alvord is to be president of the amalgamated company, according to report, and Charles F. Splitdorf will be vice-president, by the same authority.

Dyers Enter Ten Additional Suits

Ten more Dyer suits were entered in the United States District Court last week, when the Enterprize Automobile Company of Hoboken commenced proceedings against the following-named defendants for infringement of the Dyer patents: George Rudy, Harman S. Salt, Harlem Casino Taxi Service, Herman Grossman, Elias H. Kelley, John J. Ryan, Schuyler Schieffelin, Barton Sewall, John R. Keim and the Rapid Delivery Express Company.

The suits are similar in every way to those already instituted by the Enterprize Automobile Company and ask for an injunction, accounting and damages in each case. The Harlem Casino Taxi Service and the Rapid Delivery Express Company operate several cars each, while the others are individual users having one or more automobiles each.

Klaxon Horn Makers Sue Miller

Suit has been entered in the United States District Court by the Lovell-MacConnell Manufacturing Company, makers of the Klaxon horn, against Charles E. Miller, a large supply house of New York, having branches all over the country, for alleged infringement of patents 923,048-49 and 122, covering several of the basic features of construction of the Klaxon horn.

The suit is based upon a claim that the Miller company has been selling and handling electric horn devices alleged to infringe upon the Klaxon patents. G. C. Dean represents the complainant and Herman Goldman is acting for the defense

Consolidated Alleges Infringement

More activity in the litigation based upon the Grant patent was shown last week in the United States District Court when orders were entered to take further proof in the suits against the Republic Rubber Company and the Goodrich company. The suits are for alleged infringement of the patent by the companies named and have been brought on behalf of the Consolidated Rubber Company. Last month similar suits against two constituent companies of the United States Tire Company were settled by taking out licenses to manufacture under the terms of the patent.

Weed Stops McKinnon

Defendant Company Declares It Did Not Infringe Non-Skid Chain Patent Intentionally

BUFFALO, N. Y., May 14—Upon application of the Parsons Non-Skid Company, Ltd., the Weed Chain Tire Grip Company and Harry Weed, Judge Hazel in United States District Court to-day issued a temporary injunction restraining the McKinnon Chain Company of Buffalo from manufacturing and selling portions of a non-skid tire equipment. The application was made on the ground that the McKinnon Chain Company in the manufacture and sale of Cross chains infringed upon the patent held by the Wood corporation.

The McKinnon people declare they did not infringe intentionally on the Parsons patent, but Judge Hazel held that the presumption was strong that the defendant was fully advised of the restrictions relative to the Parsons chain and he granted the preliminary order.

$10,000 for Injuries at Races

Judgments for about $10,000 have been entered in the New York Supreme Court against the Motor Racing Association and the Brighton Beach Racing Association and in favor of Miss E. Everts, who brought the suits as the result of injuries sustained by her at the 24-hour race staged by the Motor Racing Association at Brighton Beach in May, 1910.

Miss Everts claimed that because the lights were extinguished in the grandstand late at night, while the cars were running, and just at the time she was attempting to descend the steps and proceed toward her car, she fell and suffered permanent injuries.

Yellow Taxicab Merger Effected

BRISTOL, CONN., May 13—The business of the Connecticut Taxicab Company of New York, which has been reorganized and changed to the Yellow Taxicab Company, has purchased the New York Transportation Company and the Cab and Taxi Company, all of which will be under the one management. Arthur R. Rockwell, of the New Departure Company, is president, and Jesse Judson, former Bristol man, assistant treasurer. The New Departure Company has been producing the yellow taxis and they will continue to be put out by that company.

Frontier Tire Company Organized

BUFFALO, N. Y., May 14—The Frontier Tire & Rubber Company, manufacturers of automobile tires and sundries, has just completed the organization of its mammoth plant here and during the past week officers were elected. Orson E. Yeager, head of the Buffalo Chamber of Commerce and president of the Victor Motor Car Company, of this city, was chosen president of the Frontier company. Other officers include: First vice-president, Frank V. E. Bardel; second vice-president, John W. Gibbs; treasurer, George T. Roberts; secretary, M. F. Dirnberger; general manager, John N. Gardner. Together with Charles F. Benzing, of Buffalo, all of the officers comprise also the board of directors of the manufacturing rubber concern. New machinery has been installed in the plant at 1400-1414 Niagara street.

BROCKTON, MASS.—The Leighton Auto Company of Brockton, Mass., has made a voluntary assignment for the benefit of its creditors. The liabilities are $34,264.13 and the assets are approximately $6,162.04. W. H. Marble has been named assignee.

Non-Skid Tread Patent Killed in Final Court

Morgan & Wright Win Sweeping Victory Over Republic Rubber Company—Full Text of Decision

Litigation Has Lasted 3 Years and the Decision Reverses Finding of Lower Court

MORGAN & WRIGHT won a sweeping victory in the patent suit instituted by the Republic Rubber Company in 1909, when the United States Circuit Court of Appeals for the Second Circuit reversed the findings of the court below and ordered that the decree of the United States District Court which was entered during the New York show season in January, be wiped out.

The suit was based upon the Mell patent covering the well-known staggard tread of the Republic Rubber Company, and it was alleged that the nobby tread tire made by Morgan & Wright infringed the patent.

The opinion of the court was written by Judge Noyes, who also wrote the findings of the same court in the final Selden litigation. The reasoning of the court was directed especially to the Healy patent, a British invention covering bicycle tires in particular, but worded so broadly that it includes all kinds of rubber vehicle tires within its purview. Judge Noyes turned the proposition clear around and approached it from the rear, so to speak. He said that if, as was claimed by the attorneys for Morgan & Wright, the Healy patent anticipated the Mell patent, being dated in 1895 against 1908, it would have been an infringement of the Mell patent if it had been dated after that patent was issued. He held that Mr. Mell, while a member of the staff of the Republic Rubber Company, experimented with the Healy tire to see whether it was adaptable to the automobile. Afterward, so the court holds, Mr. Mell evolved the staggard tread. According to the opinion, the device lacks inventive merit, because it was anticipated by the Healy device.

Little is said in the opinion about the alleged likeness of the nobby tread to the staggard tread, the reasoning of the court being directed in the main to the validity of the patent.

The litigation commenced in 1909, and in January, 1912, Judge Hazel of the United States District Court held that the patent was valid and infringed by the defendant company. Judge Hazel's opinion held that the Healy patent did not anticipate the patent in suit and wiped out the other co-ordinate defenses.

His opinion granted an injunction and ordered an accounting of damages. Immediate appeal was taken by Morgan & Wright; a bond for $25,000 was filed and the production of the alleged infringing type of tires was continued.

The final adjudication of the patent in such remarkably short time is one of the unusual things about the litigation. The decision of the United States Circuit Court of Appeals is generally final in patent suits, as the Supreme Court of the United States only accepts jurisdiction of such disputes on points of constitutional law or when diverging or opposed opinions on the same subject matter are rendered by two or more circuits.

The full text of Judge Noyes' ruling is as follows:

UNITED STATES CIRCUIT COURT OF APPEALS,
SECOND CIRCUIT.

Before
LACOMBE, WARD and NOYES,
Circuit Judges.

The Republic Rubber Company,
Complainant-Appellee,
vs.
Morgan & Wright,
Defendant-Appellant.

Appeal from a decree of the District Court, Southern District of New York, sustaining the validity of the first claim of Letters Patent No. 898,907, issued to Tod H. Mell, assignor of the complainant, on September 15th, 1907, for an improvement in Tires For Vehicle-Wheels.

NOYES, Circuit Judge:

The patent in suit is for an improvement in resilient vehicle tires and consists, speaking broadly, in an arrangement of protecting studs around the tread surface of the tire, having for its primary object the obtaining of superior road gripping qualities and the preventing of the vehicle from side-slipping or "skidding."

The first claim of the patent—which was sustained by the lower court—reads as follows:

> "A tire for vehicle wheels provided with outwardly projecting circumferentially arranged elongated studs each having inwardly diverging walls, a flat outer surface, and a relatively large base, substantially as described."

The defenses are:

(1) Invalidity;
(2) Non-infringement.

In considering the question of the validity of the patent we should look, in the first place, for the disclosure in the prior art which seems to approach most closely the claimed invention, and our attention is at once attracted to the English patent granted to Healy in 1895.

Taking up then the Healy patent we may conveniently test the question of anticipation with reference to the rule that that which infringes if later anticipates if earlier. Let us then assume that the Healy patent is of later date than the patent in suit and see whether it infringes.

The patent in suit is for an improved outer surface of a vehicle tire and it is not limited in scope to any class of vehicles, although an automobile is indicated as an example of an appropriate use. The Healy patent is also for an improved outer surface of a tire and likewise is not limited to any class of vehicles, although cycles are mentioned particularly.

The structure of the patent in suit is designed especially for use in connection with pneumatic tires but may be used with other tires. The Healy patent is confined to pneumatic tires. This distinction is not of importance, however, as all the tires in question in this case are pneumatic tires.

The primary object of the structure of the patent is to give good road-gripping qualities and reduce to a minimum "all side 'skidding' tendencies." The purpose of the Healy structure is to give a better "bite" and prevent side-slipping.

The patentee seeks to accomplish his object by providing the tread surface of the tire with a circumferential arrangement of elongated outwardly projecting studs arranged so as to break joints. Healy seeks to obtain the same object by a similar arrangement of elongated outwardly projecting studs.

From the examination thus far made it is apparent that the present patentee and the Healy seek to accomplish the same object and to accomplish it, so far as now disclosed, in substantially the same way. The Healy patent would clearly infringe unless there are some minor differences in construction which differentiate it from the patent in suit. And the only differences claimed to exist are those relating to the form of the projecting studs.

It is pointed out that the studs of the claim in issue have inwardly diverging walls with flat outer surfaces, while the Healy studs are described as being semi-circular in cross section.

It is also pointed out that the studs of the claim have a relatively large base, and if we assume that this requirement means something more than the requirement of inwardly diverging walls and implies a fillet at the bases of the studs, the presence of such fillets constitutes another difference in form from the Healy studs.

The patents accomplishing the same object in so nearly the same way way, we regard it as very doubtful whether the Healy structure would avoid infringement by the mere differences in the form of the studs if it were later, and being earlier, we have the same doubt whether it does not anticipate. Possibly, however, precise anticipation does not appear, and we deem it desirable to proceed further with the examination and determine whether, with the Healy patent alone or with other patents in the prior art, invention is to be found in the patent in suit.

We might consider this question altogether in the abstract. But we can do better than that in this case. The record shows the patentee—Mr. Mell—actually starting out with the Healy structure, and the changes which he made in it for which he obtained the present patent. The case is rather remarkable in that we can see the patentee making changes in the nearest structure of the prior art and can determine better than ordinarily whether such changes involved the exercise of the inventive faculties or mere mechanical skill.

It appears from the testimony that the attention of Mr. Mell—an automobile tire maker—was called to the Healy patent and that he had a tire with a stud arrangement constructed in accordance with that patent for use on an automobile and ran it for some two hundred miles. After this experimental run, the patentee talked about the condition of the tire with his associate, Petersen. Petersen called Mell's attention to the fact that many of the studs were gone and that others were badly undercut and Mell said that he could easily remove the objection of undercutting by putting a fillet around the stud and taper it off from the tread. He also suggested that the Healy stud was too pointed; that they were a little too narrow and light, and that more studs should be put on the tread. Thereupon, as Petersen says, "Mr. Mell and I talked it over in the house and we decided to make the studs more blunt and wider and set them close together, and then Mr. Mell went ahead and got up the drawings and moulds made and we made some tires of that kind. That was the Staggard tread tire—"Staggard" being the name of the tire made under the patent in suit.

It is thus quite apparent that the difficulties which appeared in the Healy structure were easy of solution. No experiments were necessary. The remedy seems to have been quite obvious. We think it the better view that any head workman in the tire art should have been able to make the studs larger and flatter and to provide a filleted base to prevent them from being torn off. The case is one in which the language of Mr. Justice Matthews in Hollister vs. Benedict, 113 U. S., 59, 73, seems applicable:

> "A skilled mechanic, witnessing the performance of a machine, inadequate by reason of some defect, to accomplish the object for which it had been designed, by the application of his common knowledge and experience perceives the reason of the failure, and supplies what is obviously wanting. It is but the display of the expected skill of the calling, and involves only the exercise of the ordinary faculties of reasoning upon the materials supplied by a special knowledge, and the faculty of manipulation which results from its habitual and intelligent practice; and is in no sense the creative work of that inventive faculty which it is the purpose of the Constitution and the patent laws to encourage and reward."

But we do not find it necessary to hold that on account of the presence of the Healy patent alone in the prior art, the patent in suit is invalid for want of invention. The Healy patent includes all vehicle tires and would embrace those of automobiles. The patent in suit embraces all tires and would include those of cycles. Assuming, however, that the Healy patent is to be regarded as relating to cycles and the present patent to automobiles and that automobiles require more of tires than cycles, still there were many patents and uses in the prior art showing automobile tires with studs

upon their tread surface to prevent skidding and to accomplish the objects stated in the patent. Thus, for example, the Clark British patent of 1904 shows a cover for pneumatic tires for motor vehicles with studs to prevent skidding or side slipping, and some of the illustrations of this patent show an arrangement of projections quite similar to those of the patent in suit. So the Heinemann British patent of 1907 shows various arrangements of studs upon the tread surface of motor vehicle tires. The record also shows many uses in the prior art of non-skid automobile tires with projecting studs variously arranged.

Therefore, in determining whether invention is to be found in making the changes in the Healy tire—regarded as a bicycle tire—to obtain the tire of the patent in suit—regarded as an automobile tire—we must consider the automobile tires shown in the prior art. And considering the art as it is shown to have existed, we are unable to reach any other conclusion than that the tire of the patent in suit, although successful, came into existence through the exercise of mere mechanical skill and not of the inventive faculties.

The decree of the District Court is reversed with costs and the cause is remanded with instructions to dismiss the bill with costs.

Held on False Pretense Charge

INDIANAPOLIS, IND., May 13—Just one day before the statute of limitations expired, W. R. Hostetter was arrested in this city last Tuesday on charges of embezzlement, grand larceny and obtaining money under false pretenses. Hostetter was taken to Newcastle, where the affidavit was filed by several stockholders of the Universal Motor Company, and was released on bond.

Hostetter was one of the promoters of the plan to move the motor car company's plant from Denver, Col., to Newcastle. About $30,000 worth of stock is said to have been taken by Newcastle people on a contract that the factory should be moved within 90 days under forfeit of $5,000.

Thus far the factory has not been moved and some of the stockholders have been dissatisfied. Hostetter says he has nothing to fear and that he has carried out the contract with the stockholders so far as it was within his power to do so.

Sold Oils That Were Uninspected

SHEBOYGAN, WIS., May 13—The Wadhams Oil Company, of Milwaukee, Wis., operating numerous branches throughout Wisconsin, was convicted on twenty-six distinct counts of selling uninspected oils in the Sheboygan district. The cases were instituted in September, 1909, and the company was at that time found guilty on twenty-six of thirty-two counts. The oil company contended that an injunction which has been issued in another county restraining the state oil inspection department from carrying out its duties, opened the way to sell oils without the required state inspection. The injunction had been granted on the ground that the inspection law was unconstitutional. Since then the Supreme Court held the law to be constitutional and only recently confirmed the verdict of the court at Sheboygan in the Wadhams cases. Following this decision, the Wadhams company came into court as convicted and paid fines of $25 on twenty-five counts and $5 on the twenty-sixth, making a total of $1,005.

In another case at Milwaukee, the Wadhams company's conviction was also made to stand and the company was fined $5 and the costs, which amounted to a large sum.

The Sheboygan and Milwaukee convictions and affirmation seem to establish the right of the state of Wisconsin to inspect all petroleum products sold in Wisconsin.

Rose Company Suits Dismissed

Suits instituted by the Rose Manufacturing Company against Thomas Harper, American Auto Supply Company, Lowe Motor Supplies Company and the Cox Brass Manufacturing Company for alleged infringement of the Rosenbluth patent on license and lamp brackets have been dismissed on motion of the complainant. Before Judge Holt of the United States District Court the dispute was as to whether the suits should be dismissed without prejudice and with leave to renew them. The court held adversely to the complainant company and taxed the costs of action against the Rose company, except as far as such action applies to the Cox Manufacturing Company.

Truck-Making Concern Goes Into Bankruptcy

Denniston Company Files Voluntary Petition in United States District Court —Assets Exceed Liabilities

Receiver Will Continue the Business—Creditors Will Recover Dollar for Dollar

BUFFALO, N. Y., May 13—The Denniston Company, manufacturers of commercial automobiles, tops and bodies for motor cars, and other accessories, filed this morning a voluntary petition in bankruptcy with Clerk Petrie of the United States District Court. The company has liabilities to the amount of $65,745.94 and assets totaling $99,636.27. This afternoon Judge Hazel in United States Court appointed Edward J. Barcale of this city as receiver. Bond, which was furnished immediately, was placed at $20,000. The receiver was directed to continue the business of the concern for a period not exceeding 30 days.

Most of the creditors of the Denniston Company, which has its office and factory at 1219 Main street, this city, are Buffalo corporations and individuals. The largest creditor is the Marine National Bank, which has claims aggregating $30,000. These claims are all on notes, the largest of which is one for $17,000. Walter M. Schoollkopf, of Buffalo, who loaned the bankrupt concern $4,500, is also a large creditor. The Schoollkopf claim is secured by three commercial cars which were turned over by the Denniston Company at the time the loan was made. The notes of the Marine National Bank are unsecured. The creditors will recover in full, it is stated by the Denniston officials, whether their notes are secured or unsecured.

The assets consist largely of stock in trade, machinery and tools, accounts receivable and unfinished work. The stock in the commercial car department is valued at $34,887.85, while the repair and body departments are valued at $20,186.74. The estimate on unfinished work, which includes labor and material, is $10,014.84. Machinery and tools are valued at $21,652.

To Permanently Restrain Strikers

BUFFALO, N. Y., May 14—Judge John R. Hazel, of the United States District Court, has set May 18 for the hearing of President William Meineman and other officers of Local No. 4, International Molders' Union of North America, to show cause why the temporary injunction, issued last week by the court, restraining them from interfering with the employees or business of the Aluminum Castings Company, makers of castings for local automobile manufacturers, should not be made permanent. Daniel V. Murphy is attorney for the molders, and the firm of Love & Keating have been retained by the Aluminum Castings Company. About a month ago the molders and coremakers of this concern struck because the company refused to recognize the union.

Haynes Wins from Goodman

KOKOMO, IND., May 13—The Haynes Automobile Company, of Kokomo, has won the damage suit brought against it in the Federal Court at Indianapolis by Benjamin Goodman, of Chicago. The suit was for $50,000 damages for alleged breach of contract, but Judge Anderson instructed the jury to find for the defendant. The suit was one involving a coincidence. Goodman one afternoon signed a contract with officers of the company for the Omaha agency, but it was found that during the morning the manager had signed a contract with an Omaha man.

Diamond-Goodrich Deal Soon to Be Announced

Official Confirmation of Merger Will Show Increase of Capital of Combination to $100,000,000

Stocks of Both Companies Are Strong as a Result of the Amalgamation

AKRON, O., May 13—While official confirmation is lacking as yet on the rumored amalgamation of the Diamond and Goodrich companies into a $90,000,000 or $100,000,000 corporation, there can be no question that the deal has been made and that a statement will be issued not later than Wednesday. Absolutely no information has been obtainable so far from local officials of the companies. The fact that no denial is made of published reports of the amalgamation is taken here as a confirmation of the reports.

Big stockholders in the Diamond company say that when announcement is made it will show an increased capitalization of the Diamond stock issues from $10,000,000 to $45,000,000. The company's inventory, preparatory to the distribution of $35,000,000 in stocks, was completed last week.

The amalgamation will be the latest big step by these companies in the direction of expanding activities. Within 6 years the capital of each company has jumped from $5,000,000 to $45,000,000.

A local stockholder of the Diamond company said: "The Diamond plan, as I have it, provides for a capitalization of $45,000,000, one share of common stock being equal to three shares of the new common, with 50 per cent. cash dividend."

No credit is given here to rumors that the amalgamated companies will buy other Akron rubber concerns, at present, at least. The financing of the combine is in the hands of Goldman, Sachs & Co.

President Francis A. Hardy of the Diamond is now in Chicago. He was here last week during the inventory. It is claimed that W. B. Miller, secretary of the Diamond, will retire upon completion of the amalgamation. It is also reported that several other big officials of both companies will retire. As to this, however, there is no confirmation at this time. Both companies have been closely related for 5 years and a consolidation brings no surprise here.

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On the Chicago exchange Diamond is quoted at 395 bid and according to reports emanating from apparently reliable sources the plan for its distribution of stocks is somewhat different from the reports coming from Akron. The plan as outlined here is for $15,000,000 of 7 per cent. cumulative preferred and $30,000,000 common. Present stockholders are to receive 2.7 shares of the new common for each share of their holdings, together with 1 share of new preferred and $50 in cash.

It is estimated that under this plan of distribution there will remain $5,000,000 of the preferred and $3,000,000 of the common in the hands of the company for public distribution.

It is said that the Goodrich plan which was recently outlined in these columns provides for $10,000,000 more of stocks than that promulgated by the Diamond company. The total earnings of the companies mentioned in the merger plans has reached $45,000,000 a year.

Trading in the Goodrich shares was not large in volume on the curb, but the price of common was marked up to 83, an advance of 2 points.

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At the New York headquarters of the Diamond and Goodrich companies neither confirmation nor denial of the rumored amalgamation was vouchsafed. President Raymond of the Goodrich company was in New York Monday and left for Akron Monday night, but he would say nothing about the details. The only comment made by Mr. Raymond was that the Cleveland papers had published a lot of stuff about the merger.

Goldman, Sachs & Company, the bankers mentioned as having the financial negotiations in hand, stated that all reports published so far have been premature and in reply to all queries returned the enigmatic answer: "We have no comment whatever to make."

Among the local trade the impression is that the merger announcement may be expected this week unless something untoward intervenes.

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Automobile Securities Quotations

Automobile manufacturing securities declined during the week, with the exception of Reo. Tire and rubber securities followed various trends, as may be seen by comparing quotations with last week's, the reason being to some extent the rumored merger of several leading tire-making interests. Money rates were firm throughout the week, call fluctuating from 2¾ to 3 per cent.

Time loans are being made on a basis of 3½ per cent. for 6 months and 3¼ per cent. for 90 days. These quotations represent a decline of about ¼ per cent. Call money ranged from 2¾ to 3 per cent. Quotations as of May 14 are shown herewith:

	1911		1912	
	Bid	Asked	Bid	Asked
Ajax-Grieb Rubber Co., common	..	..	..	130
Ajax-Grieb Rubber Co., pfd	..	..	95	100
Aluminum Castings, preferred	..	..	100	..
American Locomotive, common	38	39	43¼	43¾
American Locomotive, preferred	104½	106½	108	109½
Chalmers Motor Company	..	..	140	155
Consolidated R. T. Co., common	3½	5	10½	11
Consolidated R. T. Co., pref	15	25	40	..
Diamond Rubber Company	273	275	388	391
Firestone Tire & Rubber Co., com	164	168	262	264
Firestone Tire & Rubber Co., pfd	103	105	99	101
Garford Company, preferred	..	..	99	101
General Motors Co., common	36	37	33	34
General Motors Co., pfd	79	80	72	74
B. F. Goodrich Co., common	235	240	84	85
B. F. Goodrich Co., preferred	112	115	107	108½
Goodyear Tire & Rubber Co., com	218	221	236	240
Goodyear Tire & Rubber Co., pfd	101	102	105	106
Hayes Manufacturing Company	..	..	..	104
International Motor Co., com	..	..	33	35
International Motor Co., pfd	..	..	93	96
Lozier Motor Company	..	..	..	52
Miller Rubber Company	..	..	162	165
Packard Motor Co., preferred	..	..	105	106½
Peerless Motor Company	..	..	160	170
Pope Manufacturing Co., com	54	57	30	34
Pope Manufacturing Co., pfd	77	80	74½	75½
Reo Motor Truck Company (par $10)	8½	9¼	9	10½
Reo Motor Car Company (par $10)	21½	22¼	24	25
Rubber Goods Co., common	..	..	85	..
Rubber Goods Co., preferred	..	..	104	109
Studebaker Company, common	..	..	38½	40
Studebaker Company, preferred	..	..	96	98
Swinehart Tire Company	..	..	112	114
U. S. Motor Co., common	39	40	6	7
U. S. Motor Co., prefered	79	80	25	28
White Company, preferred	..	..	107½	108½

Vacuum Oil's 6 Per Cent. Dividend

The recently enlarged Vacuum Oil Company has issued a statement to its stockholders that the directors are planning to declare a dividend in two installments and amounting to 6 per cent. on a capitalization of $15,000,000.

The company increased its capitalization from $2,500,000 to $15,000,000 during the past winter. It is expected from the present dividend action that the regular rate of payment will be 3 per cent. quarterly in subsequent years.

According to the report the company is doing a largely increased business everywhere in the world where it has branches and subsidiaries except in Austria, where the governmental discrimination in favor of Austrian refineries has caused some losses.

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Predicts Big Electric Sales

Estimating that the sales of electric cars and trucks in 1912 will be in the neighborhood of $40,000,000, T. C. Martin, chairman of the committee on progress of the National Electric Light

Association, will report at the Seattle convention of that organization in June that the total amount invested in such vehicles will reach $80,000,000. He looks for the investment of 100 per cent. in electrics before the end of the year.

A system of garage cards for consumers who use acid-lead batteries is described in Mr. Martin's report, the purpose of which is to determine the real efficiency of such batteries. Under this system it will be possible to work out a relation between the specific gravity of the electrolyte used in a given car and the number of miles the car can travel at any specific gravity.

An example is cited as follows: Where a certain pleasure car will run 72 miles on good streets when charged to a density of 1.289, it will go 60 miles at 1.260; 42 miles at 1.240; 36 miles at 1.220; 24 miles at 1.200, and 12 miles at 1.180. The battery becomes exhausted at 1.160.

One-quarter of the present electrics are trucks and commercials.

Market Changes for the Week

The metal market was firm throughout the week, with a rise in the fluctuations of copper and tin. The April statement of the Copper Producers' Association showed a delivery into domestic channels of 9,000,000 pounds in excess of orders during the month past. Only 2,700,000 pounds of this stock are refined up to date. April exports amounted to about 50,000,000 pounds.

Steel developments during April were revealed by the statement of the United States Steel Corporation, on May 12, showing unfilled orders aggregating 5,664,885 tons, or 360,044 tons more than one month ago. Total orders received during April were about 1,410,000 tons and shipments 1,050,000 tons. During the past week pig iron contracts for 125,000 tons were placed with the steel producers.

Crude rubber declined to a basis of $1.09 for up-river fine in the New York market this week and the decline was duplicated in the world's markets. The trading was featureless and on a small scale. The quotations were largely nominal. At the London auction 600 tons will be offered. So far this year the plantation offerings at auction have been 5,946 tons, an increase over the corresponding period of 1911 of 2,350 tons.

Gasoline advanced ½ cent a gallon Tuesday in response to the recent increase of 2 cents a barrel in crude oil. This makes a total advance of 4½ cents a gallon since the first of the year. Broadly speaking, the whole upward movement means an additional cost of about 12 cents a day to all the automobile owners in the country. The price range for the week follows:

Material	Wed.	Thurs.	Fri.	Sat.	Mon.	Tues.	Week's Change
Antimony, per lb.....	.06½	.06½	.06½	.06½	.06½	.06½	.....
Beams & Channels, 100 lbs..	1.36½	1.36½	1.36½	1.36½	1.36½	1.36½	.....
Bessemer Steel, Pittsburgh, ton	20.00	20.00	20.00	20.00	20.00	20.00	.....
Copper, Elec., lb.....	.15 7/10	.15⅝	.15 17/20	.15 17/20	.15 9/10	.16	+.00 3/10
Copper, Lake, lb.....	.15⅞	.15⅞	.15⅞	.15⅞	.16	.16½	+.00⅝
Cottonseed Oil, May, bbl.....	7.30	7.23	7.14	7.14	7.14	7.35	+.05
Cyanide Potash, lb.....	.20	.20	.20	.20	.20	.20	.....
Fish Oil, (Menhaden) ..	.40	.40	.40	.40	.40	.40	.....
Gasoline, Auto, 200 gals.....	.18½	.18½	.18½	.18½	.18½	.19	+.00½
Lard Oil, prime	.85	.85	.85	.85	.85	.85	.....
Lead, 100 lbs....	4.12½	4.12½	4.12½	4.12½	4.20	4.20	+.07½
Linseed Oil.....	.75	.75	.75	.75	.75	.76	+.01
Open-hearth Steel, ton....	21.00	21.00	21.00	21.00	21.00	21.00	.....
Petroleum, bbl., Kansas crude.	.66	.66	.66	.66	.66	.66	.....
Petroleum, bbl., Pa., crude....	1.55	1.55	1.55	1.55	1.55	1.55	.....
Rape Seed Oil, refined	.68	.68	.68	.68	.68	.68	.....
Rubber, Fine Up-river Para....	1.10	1.10	1.09	1.09	1.09	1.09	—.01
Silk, raw Ital...	....	....	4.15	....	4.15	4.40	+.25
Silk, raw Japan..	....	....	3.65	....	3.62½	3.62½	—.02½
Sulphuric Acid, 60 Beaumé....	.99	.99	.99	.99	.99	.99	.....
Tin, 100 lbs....	45.87½	46.25	46.30	46.40	46.62½	46.35	.47½
Tire Scrap, lb..	.08½	.08½	.08½	.08½	.08½	.08½	.....

President Taft Moving for Patent Law Revision

Sends Special Message to Congress Asking Legislation Authorizing Appointment of Commission

Calls Attention to the Evils of the Present System of Granting Patents

WASHINGTON, D. C., May 13.—President Taft has taken a decided step toward revision of the patent laws, which have remained practically unchanged since 1870. He has sent a special message to Congress asking for legislation to authorize him to appoint a commission to investigate the patent laws and report what changes are necessary to make them fit modern conditions. The President gives several reasons to show the need for a change, dealing particularly with the phase of the case presented in present practice wherein combinations have been enabled to control certain industries by holding patents. His message, in part, is as follows:

The wisdom of the framers of the Constitution in providing that Congress shall have the power to promote the progress of science and the useful arts by securing for limited time to authors and inventors the exclusive right to their respective writings and discoveries has been demonstrated by the fact that the industrial progress and development of the United States has been due largely to the stimulus to invention given by the protection afforded by the patent laws.

In recent years, however, combinations based upon patents have been formed which have succeeded in controlling very largely the output of particular industries, and this control has been extended by contracts based upon patents, requiring the users of patented machines to buy from the corporations owning the patents or from firms under their control supplies or other articles to be used in connection with the patented machines. Some of the circuit courts of appeal have held that such contracts, based upon patents, were valid, and that those who violated the terms of such contracts were liable as contributory infringers. The correctness of such decisions has recently received the approval of the Supreme Court of the United States in the case of Sidney Henry et al. *vs.* A. B. Dick Co., by the vote of four justices of the seven who heard the case. An application for a rehearing of that case by the full bench was made and denied, so that the construction put upon the existing law in that case must be regarded as conclusive.

Large corporations, by absorbing patents relating to particular arts, have succeeded in dominating entire industries, and the only market to which an inventor of improvements upon such machines may offer his patents for sale is to such corporations. In many instances it is charged corporations buy patents for improvements, and, although the inventions covered thereby constitute a distinct improvement in the art, their manufacture is suppressed and the public never receives the benefit of such inventions during the life of the patent.

Some other countries have discouraged the shelving of inventions in this manner by laws requiring that the owner of a patent shall manufacture the invention covered by his patent within a certain period or that his patent shall be declared forfeited. Other countries provide that the owner of a patent who does not manufacture the invention in the country granting it within a reasonable time may be compelled to grant a license to anyone who may apply to manufacture and sell the invention upon such terms as may be determined to be reasonable by a public officer or by a court of competent authority. It is worthy of careful consideration whether or not legislation on some such lines should be enacted to prevent our patent laws from being made the basis of unjust monopoly, extending beyond the legitimate protection of inventions required to promote science and the useful arts or the means of stifling improvement and progress of the arts.

It is also claimed by some that legislation is necessary to enable an applicant to more speedily obtain his patent and also to prevent the holding of applications for patent in the United States Patent Office for a long period of time until the particular art to which the patent relates has grown up.

Certain amendments to the patent laws are required to make effective the provisions of the Convention of the International Union for the Protection of Industrial Property, held at Washington and signed June 2, 1911.

Much complaint has been made that patents granted by the United States are not deemed prima facie valid by the courts and that preliminary injunctions are granted only upon patents which have been adjudicated to be valid by the courts or those whose validity has been prima facie established by public acquiescence for a considerable period of time. It is urged that the laws should be revised in such a manner that the issuance of a patent by the United States will carry with it the prima facie force and effect of a valid patent, and the burden placed upon him who would infringe that patent to establish its invalidity, rather than, as at the present time, to require the patentee to establish the validity of his patent before obtaining a preliminary injunction or securing an award of damages for the intentional infringement of his patented invention.

Great care should be taken in any revision of the statutes relating to patents and patent rights not unduly to interfere with vested interests which have been properly created under the existing laws, or to impair the efficiency of a system from which so much benefit has been derived by the country. I am of the opinion that a careful study of the patent laws should be made by a commission of qualified persons appointed for that purpose with instructions to report such revision of those laws as may be necessary to harmonize them with the best thought and needs of our time; and I therefore recommend the enactment of a statute authorizing the President to appoint a commission to investigate the present state of the patent law and to report what, if any, changes or amendments should be made to conform that law with modern conditions and requirements.

Little Hope for Revival of Fairmount Park Race

Opposition to the Event Was Practically Unanimous, Although Entire Commission Was Not Present

Some Talk of Holding Event Outside of City, But Expense Would Be Too Heavy

PHILADELPHIA, May 11—There will be no more automobile races in Fairmount Park.

This ultimatum, issued by the Fairmount Park Commissioners last Wednesday afternoon in approving Dr. J. William White's resolution discontinuing all forms of racing in the Park, caused a spontaneous outbreak of disappointment and genuine regret. So unexpected was the decision to a majority of the people that a realization of the fact that the annual 202½-mile road race is no more is scarcely yet appreciated. Though the action of the Commission in refusing the application of the Quaker City Motor Club to conduct the race next October has found a few champions, the criticism that has been heaped upon Mayor Blankenburg and the other members who voted away the classic has been practically city-wide.

When Dr. J. William White's resolution prohibiting any form of automobile racing in Fairmount Park was originally introduced last November it created consternation, but as decision was repeatedly postponed it was confidently predicted that whatever opposition there was to the classic would gradually simmer down and the resolution be either adversely reported or else allowed to die a natural death. In the meantime nothing transpired to cause anxiety on the part of the Quaker City Motor Club officials, sponsors of the event from its inception, or to the multitude of people who annually derive so much pleasure in witnessing the races, as the resolution was buffeted about from the Commission to the sub-Committee on Superintendence and Police and back to the Commission again. But Dr. White was insistent, and at succeeding meetings of the Commissioners repeatedly urged that final disposition be made of the matter, and at last month's meeting announcement was made that a decision would be made at the regular meeting in May.

The Commission assembled on Wednesday in the City Hall and the White resolution was taken up. Before taking a vote the question was provocative of some lively discussion for and against it, but it was evident that several of the Commissioners had undergone a change of heart since last November, as at that time the resolution was not so favorably received. But Wednesday's vote stood 8 to 1 in favor of abolishing the race.

Dr. White's argument for favorable action on his proposal was a repetition of the reasons advanced in the resolution, declaring the races "an unnecessary danger at all times," that they "exert a demoralizing influence" and "encourage drivers to be reckless at other times with disastrous results." He also characterized the event as an advertising scheme of manufacturers, questioned the Board's authority to grant a permit and insisted that because no serious accident had occurred so far, that in itself was no guarantee for the future, and the races should be stopped before loss of life results.

In seconding Dr. White's resolution T. De Witt Cuyler urged its adoption on the ground that the race was not "true sport," but only "an advertisement for the companies that manufactured the cars." He expressed himself in no unmistakable terms in favor of discontinuing the races and also questioned the legality of a permit such as has been issued for the past four years.

Dr. White also found a sturdy champion in Mayor Blankenburg, who spoke in opposition to the granting of a permit. The Mayor's action came somewhat in the nature of a surprise, as it had been supposed he was not so strongly in favor of the abolition of the race. But in speaking for the resolution he characterized the event as an incentive toward engendering the speed mania.

Fred C. Dunlap assumed the burden of the Quaker City Motor Club's argument and made an earnest plea for a continuation of the race, dwelling on the fact that the races were held four consecutive years without a serious accident, that hundreds of thousands of people enjoy the event, that thousands of visitors are attracted here at that time and the proceeds devoted to a worthy cause—charity. With the continued efficient handling of the race by the Quaker City Motor Club, with the co-operation of the municipal authorities, he saw no reason why it shouldn't be as successful and free from accident as in the past.

But it was of no avail, and as matters now stand the Fairmount Park race belongs to the past. It has always been a subject of more or less argument as to whether in granting permits for races in the past the Fairmount Park Commission had not exceeded its power, and one of the principal arguments advanced on Wednesday was "whether the Board had the legal right to grant a permit for the race and if anyone should be killed or injured, the Commissioners might find themselves individually responsible in suits for damages by relatives of those injured."

The possibility of holding the race outside the city is dismissed as unworthy of serious consideration on account of the many obstacles presented, first and foremost of which is the enormous expense attached even if there was a suitable course, which there is not. The great success attending the event each year has been due to the fact that with the co-operation of the municipal authorities some 2,000 policemen were stationed at frequent intervals along both sides of the course, insuring a maximum amount of protection.

An effort will be made to have the subject of the race given further consideration by the Fairmount Park Commissioners, but little hope is entertained that there will be any race in 1912.

To Improve New England Track

BOSTON, MASS., May 11—The New England Aviation Company has leased Rockingham Park at Salem, N. H., and it has had plans drawn up to extend the track there so that it will be 2½ miles in length. After the races on May 30 work will begin at once to make the track as fast as possible. The foundation for the work is all ready, as the park was built at a cost of more than $1,000,000 by a syndicate of wealthy New York horsemen headed by James R. Keene, but horse racing there was a failure because no pools were allowed to be sold.

Harry Grant, winner of the Vanderbilt race twice over, has been secured to manage the May 30 races and already he has secured promises from a number of Boston motorists to enter the events. There will be amateur and professional races at varying distances on the coming holiday.

The big event, a 300-mile race, however, is planned for Columbus Day, October 12. This is a state holiday in Massachusetts and it is believed that as there will be no other big races on at that time some of the big cars and star drivers will be secured for that day. The Aviation Company plans to put up some big purses to attract a representative entry list, and with many motorists spending the fall days in New England, together with the many in the six states, it is expected that a tremendous crowd would be attracted to the only motor races of any importance held in the East.

Salem, N. H., is only about 30 miles from Boston and it is as easy to reach it from Worcester, while a lot of motorists could drive there from all over New England easily. The facilities for garaging the cars are admirable, too, so that it has everything in its favor.

National Wins Free-for-All at Atlanta Climb

But Succumbs to Pope-Hartford in the 301-450 Race

E-M-F Captures 161-230 Event, Flanders Annexing the 160-and-under Race

ATLANTA, GA., May 11—Atlanta's hill climb, the fifth in six years, after several postponements and a lingering start, got away finally this afternoon to a real success. Before it was finally arranged, however, there was a strong argument among the committeemen as to which class the affair should be run under—an argument so heated that it threatened to break up the event. Finally, however, it was decided to run the climb under Class C, with one free-for-all, Class D. Then came a hard chase after entries, a hunt that was only moderately successful. And finally on the day of the climb it was cloudy and threatening, and for a time appearances indicated another postponement.

In the face of all this it was a good climb. Two of the events were well filled and three offered good competition.

When the cars lined up at the foot of the hill there was the usual delay in getting the timing apparatus to work. The complaint this time was a lack of batteries strong enough to work the electrical apparatus. This delay proved the saving of several cars, for it was found at the last moment that many of them were without the flooring required under the rules and there was a tremendous scurrying around to secure something that would look enough like a floor to pass the technical committee. Several drivers at the last minute tore metal signs from surrounding trees and fastened them any old way across the offending openings.

The climb, once started, ran smoothly enough, and with as little real excuse for thrills as was to be expected of a climb straight up a 3.61 grade hill, without a bump in the entire 4,716 feet and over a perfect macadam road, well oiled and thoroughly policed.

The chief interest of the day centered around the fourth event, for cars in the 301-450 class, and the free-for-all. In both, the real contenders were a National, a Pope-Hartford and a Buick. And, as not infrequently happens, the second event offered a reversal of form. The 301-450 race was won by the Pope-Hartford, in :51 2/5, with the National second, in :54 3/5. The Buick was third. These same three cars went immediately down the hill again and once again raced to the crest, only to reverse the decision. This time, in the free-for-all, the National proved the fastest and won in :53 3/5, with the Pope-Hartford 2/5 of a second slower and the Buick again third.

The mark of the Pope in the fourth event, however, was the best of the day and gave the car one leg on the Automobile and Accessory Association cup, offered for the fastest time. Owing to the fact that the course started 75 feet farther from the bottom of the hill than in other climbs and that piston classifications governed instead of the price classifications used in past events, there was no satisfactory way of comparing the time made in this climb with that of past years. However, there was nothing in the way of speed demonstrated that threatened the old records. The :45 4/5, set by Lambert in a White steamer in 1909, was not approached, nor was the gasoline car record of :47 4/5 made by Almand driving a Simplex in 1910. The time of the National, proportionally calculated for the shorter distance (covered by the Simplex in :47 4/5), was :50 3/5, a full 2 4/5 seconds slower.

The first motor car event was No. 3, for machines of the 161-230 class. This was comparatively easy for F. H. Odum in an E-M-F, with Fords second and third.

There was no competition in the "under 160" and in the 231-300 classes, only one car finishing in each. The summary of the races follows:

160 cubic inches and under, for the E. Rivers Cup

No.	Car	Driver	Time
1	Flanders	F. L. Lundgren	1:00 4-5
2	Hupmobile	Philip L. Engle	Did not finish

161 to 230 cubic inches, for Atlanta Constitution Cup

1	E-M-F	E. H. Odum	1:00 2-5
2	Ford	R. S. Abbott	1:04
3	Ford	I. O. Teasley	1:11
4	Overland	C. Lenney	1:22 1-5
5	Ford	J. E. Baggs	1:29

231 to 300 cubic inches, for Goodyear Cup

1	Pope-Hartford	D. M. Bennett	1:20
2	Dorris	W. W. Leathers	Did not finish

301 to 450 cubic inches, for Atlanta Georgian Cup

1	Pope-Hartford	L. S. Crane	0:51 2-5
2	National	B. McKerrall	0:54 3-5
3	Buick	C. O. Norman	0:55 2-5

Free-for-all, gasoline cars, for Atlanta Journal Cup

1	National	B. McKerrall	0:53 3-5
2	Pope-Hartford	L. S. Crane	0:54
3	Buick	C. O. Norman	0:55 1-5
4	Flanders	F. L. Lundgren	1:00 1-5
5	Dorris	W. W. Leathers	1:10

Showing long lines of cars parked near the starting line of the Atlanta Hill Climb

Tuning Up at Indianapolis

Majority of Drivers and Cars Entered in 500-Mile Sweepstakes Now at the Speedway

Bruce-Brown to Drive a National—Barndollar Ousted from White

INDIANAPOLIS, IND., May 14—David Bruce-Brown has closed negotiations with the National Company to drive the third National entry in the 500-mile race at the Indianapolis Motor Speedway, May 30. This will be the first time this driver has driven other than a foreign-made car.

A majority of the drivers for the race have arrived and are trying out their cars at the Speedway. The brick track is said to be in better condition than it was last year and the only thing needed to establish a new record on Memorial Day is perfect weather.

Several drivers are trying out wire wheels in the practice spins. Burman is trying them out on his Cutting, Jenkins is going to try them out on his Continental and the National drivers have been giving them a test.

Among those who have arrived for practice are Joe Horan, with his Lozier; Bill Endicott, who will drive a Schacht; Dingley and DePalma, the former to drive a Simplex and the latter a Mercedes; Knight and his Lexington; Mel Marquette and his McFarlan Six, and the National and Stutz entries. Practically all of the drivers and their cars are expected before the end of the week. Ralph Mulford is driving overland from Springfield, Mass., in his Knox. Tetzlaff and his Fiat and Liesaw and his Marquette Buick are already at the Speedway practicing.

Practice started in earnest today, Wilcox turning one lap in the National in 1:38. Other fast rounds were the 1:50 made by Burman in a Cutting, and DePalma's 1:51 in a Mercedes.

Interest in the big race has been stimulated by the offer of the Hartford Suspension Company, which has agreed to give three prizes to cars equipped with the Truffault-Hartford shock absorber. The driver of the winning car will receive $250, the driver of the second car $150 and the driver of the third $100.

Minneapolis Dealers to Organize

MINNEAPOLIS, MINN., April 13.—Preliminary to the formation of the Minneapolis Automobile Trade Association a committee of dealers met Wednesday night to formulate information to be presented at a general meeting to be called. H. E. Pence is chairman of the committee and A. N. Smith is secretary. Information has been gathered from large trade centers. The purpose is to put the business on a proper basis and to establish a clearing house list of allowances for second-hand cars. It is said that many dealers are at times giving discounts, which added to the cost of the business and the cost of service upkeep, leaves the dealer less than nothing for profit. To regulate this question is the prime purpose of prospective organization of the association.

Quakers' Legal Speed Limit Run

PHILADELPHIA, May 11—The second annual contest for the Fletcher Cup will be conducted by the Automobile Club of Philadelphia on Saturday, June 1. This contest is a continuation of the runs for the Brazier Cup, first instituted by the club 10 years ago, and which have taken place every year since with restrictions varying to suit the requirements of the law. Competition for the Fletcher Cup is conducted under the same regulations.

The event is characterized as a "legal speed limit run," speeds varying through the different sections traversed, with secret controls scattered around the course, where times of competing cars will be taken and penalties inflicted for failure to approximate scheduled times.

The contest will be won by the contestant having the least number of penalties at the finish, each car having a scheduled time, unknown to the driver, to pass the secret controls. For every minute ahead or behind the schedule the driver will be penalized one point.

Starting from the new club house, 23d and Market streets, the route will cover approximately 60 miles, with 45 minutes layover. During this layover cars may not be handled, no repairs or adjustments to be made. On leaving stopping place, cars will be timed and then continue on run. If a car fails to pass a control it will be counted out, otherwise no penalty attaches for going off the course. Cars will not be penalized for breakdowns unless the latter retard the contestants on their scheduled time.

There are no entrance fees, the contest being open only to members. The pilot car will precede contestants and map out the course with confetti.

Wisconsin Tour Grade III Affair

MILWAUKEE, WIS., May 13—The third annual Wisconsin reliability tour, which will be held during the week of July 15, will be conducted under Grade III rules of the A. A. A., instead of under the severe Grade I rules used for the first two events. The run will have as its main object the promotion of motoring, organization and selling. The W. S. A. A. will make it a week of organization meetings, enthusiasm over highway improvement and promotion of legislation in preparation for the next session of the Legislature in January, 1913.

The Milwaukee Automobile Dealers' Association, which will furnish a majority of the contesting cars, will use the tour also to make publicity for the big road racing carnival at Milwaukee next September.

Barndollar Will Not Drive White

INDIANAPOLIS, IND., May 15—Failure on the part of Win Barndollar to file a bond of $1,500 to secure an injunction against the White agents here from displacing him as driver of their entry in the 500-mile international sweepstakes on May 30 caused the Superior Court to dismiss the temporary restraining order granted on Barndollar's application and leaves the White people free to name anyone they please to drive their car.

Barndollar alleged that he had a verbal contract with Robert D. Eaglesfield, one of the White representatives here, to drive the car and claimed that despite the contract Eaglesfield was seeking another driver.

Lee Oldfield is mentioned as Barndollar's probable successor as the White pilot in the race. Herr will be the relief driver for the National car, which will be driven by Dawson.

It is announced that Len Ormsby will drive the Opel entry. A driver has not been named thus far for the little Mason, the last car entered. This entry was mailed on the day entries closed, May 1.

To Celebrate Centennial of Peace

WASHINGTON, D. C., May 13—Howard D. Hadley, of Plattsburgh, N. Y., has framed a brief in furtherance of the bill introduced into Congress recently to create a commission to arrange for the celebration of 100 years of peace between English-speaking nations.

In his brief Mr. Hadley refers to the fact that only 2 cents out of every $100 of national revenue is spent for good roads, while $71 goes for military purposes. He proposes to have Fort Montgomery turned into a national park; to erect an arch over the Quebec-Miami highway at the international border and a monument or memorial bridge near Plattsburgh to commemorate the battle of Lake Champlain.

Trade Situation Abroad

Foreign Representative of American Company Talks Entertainingly of Prospects in Various Countries

Finds Prejudice Against Our Cars Where English Agents Abound

MUCH interesting and valuable information as to the automobile situation in foreign lands has been collected by R. M. Lockwood, head of the foreign department of the Regal Motor Car Company, who has recently returned to the United States after an extended trip around the world. Considerable knowledge of the automobile market in Egypt, China, Japan, India and other Oriental countries has been obtained by Mr. Lockwood. His impressions of the countries visited and of the conditions, openings and opportunities for the sale of American-made motor cars are of exceeding value.

The Chinese, according to Mr. Lockwood, are very partial to American automobiles, although the field for their sale is limited, the cities of Shanghai and Tientsin being practically the only ones which have streets or roads suitable for their operation.

In Japan there is a total of 264 automobiles in use, about 120 of which are American-made. This is a surprisingly small number, when the general progressiveness of the people is considered, but the roads there, as in China, are largely responsible for the small number. Japanese roads, while good, were originally built for carts and for jinrikshas, hence they are not adapted for the larger motor car. Some of the thoroughfares in and around the cities of Tokio and Yokohama, however, are not to be put in this class, but in the interior of Japan, especially, the roads are so narrow as to make the use of the automobile impossible since no vehicle could pass along them. The Japanese government has recently appropriated a large sum of money for widening the roads throughout the empire, and with this in its favor, it is quite possible that in time the use of the automobile in Japan will become very popular.

In the majority of the Eastern countries many of the automobile agents are English, and the prejudice against American cars is pronounced. For this reason it is hard to establish them, the British product having a firm foothold.

Although Egypt can boast of but few cars, those that are in use there are either of English or French make. Cairo and Alexandria are practically the only Egyptian cities in which the automobile finds any favor at all, the unsuitable road conditions elsewhere in the country being responsible.

India Prefers English Cars

India has some excellent roads, but the cars used are nearly all of English make, due to this same prejudice of the English dealers, who do most of the automobile business. Nearly parallel conditions were noted in Ceylon, although the field for cars is much more limited than in India.

Very good roads are found in the Straits Settlements and the Malay States, and, although the majority of the automobile dealers in these districts are English, they do not seem to have the usual ill-feeling toward the American car. Hence there are a large number in use and they are very popular. Java, with its small European population, has a surprisingly large number of motor vehicles, a condition which may, perhaps, be ascribed to the fine roads and the general prosperity of the people. No one country may be said to control the automobile market of the island, as the makes of cars represented include the products of practically all the nations making them.

Manila is well supplied with automobiles, and in the Philippine Islands as a whole American machines are dominant. Many cars are owned in the other large places in addition to Manila. This condition, however, is not due to good roads, many of which are exceedingly poor. In Mr. Lockwood's opinion, the outlook for American cars and accessories there is very bright. At present there are between 5,000 and 6,000 automobiles, principally American, in use in the Philippines. The field is therefore a good one until such time as it is overdone.

The same prosperous condition of the industry was noted in Australia and New Zealand, and here, too, the activity is believed to be too great to continue many years. American machines are received favorably in these English lands, although they do not dominate the field by any means.

The Germans in Europe are generally backward in taking up the automobile, the domestic products there being most in favor, of course. The heavy taxation and the many restrictions which are imposed on the automobile owner are perhaps largely responsible for the apathetic feeling toward them. In Austria, especially, the owning of an automobile is very expensive, since personal taxes are raised in the case of the citizen who possesses a motor vehicle. This is to be deplored, since the streets of Vienna in particular are very beautiful and adapted to pleasure car use. For this reason Austria is regarded as the hardest country in Europe for the establishing of agencies.

Sale for Cheap American Cars

England, France and Italy have their full quota of automobiles, the roads in England being especially fine. Garages throughout the British Isles are very numerous, and supplies and accessories may be readily had. The largest automobile center of Italy is Turin, three large factories being located here.

In general, the small, low-priced machine is the only American type which finds extensive sale in foreign lands, although a number of limousines and large touring cars made in this country are marketed in Russia and Brazil. The small American car is very popular in England, but the larger English and German cars meet with the largest sale. Although English prejudice is a factor which must be reckoned with, the American manufacturer who has a machine whose price is not over $1,000 may well establish agencies on the other side.

Gasoline and oil prices vary, of course, according to the location of the country and facilities for receiving these products. In Manila, Tokio, Yokohama and other large ports in the East the Standard Oil Company and other oil-producing concerns maintain stations, and in such places the price varies from 25 to 30 cents a gallon when purchased from garages.

Gasoline can be transported only by freight or oil steamers, hence many of the out-of-the-way ports are sometimes inconvenienced, due to delays in the arrival of these boats. Siam and Sumatra especially have trouble in this respect. On one occasion to Mr. Lockwood's knowledge the automobiles of Siam were all held up for 6 months awaiting the arrival of an oil steamer. Such conditions, of course, make the price of fuel very high in these ill-favored regions.

In certain parts of South America, also, there is a scarcity of gasoline, and often the American manufacturer will receive an order for one of his cars together with that for two or three barrels of gasoline to be shipped along with the machine. Such a quantity often lasts the purchaser for an entire season.

Customs regulations must be thoroughly understood by any person or firm who ships automobiles to other countries. Duties are very high in a number of localities. Free trade between the United States and England, however, makes it possible for the American car maker to compete favorably with the English.

In South American countries in particular the customs regulations are very strict. Each car must be properly marked, its weight must be carefully noted, and so on. Inspectors at the piers of these ports watch all shipments closely, and if they do not meet with their approval, the shipper is subject to heavy fines. A knowledge of all the requirements of such shipping is therefore absolutely necessary.

Week-end Tour in North Jersey

1—Looking across small lake at Parsippany
2—Small bridge on road west from main road down Ramapo Valley
3—Repairing macadam 3 miles east of Caldwell

SOFTLY beautiful as the Berkshires of Massachusetts; wild as the sterner fastnesses of the Adirondacks; poetically lovely as the valleys of New York or Connecticut, are the hill and lake counties of northern New Jersey, now open for the first time in 5 years to unrestricted touring by outside automobilists.

New Jersey is *terra incognita* to an important portion of New York, Pennsylvania, New England, Maryland and Delaware automobilists. Prior to the passage of the reciprocity law last month about 35,000 outsiders registered in New Jersey. The remainder, amounting to over 200,000 owners, never set wheel within the prohibited state in spite of its splendid roads.

Now that the legal bars are down and New Jersey has been welcomed back into the sisterhood of states, the residents of the surrounding and near-by commonwealths will have to discover New Jersey all over again.

The blue and yellow license plate of New Jersey is to be seen throughout the touring field and the blazing red and white of New York and the vari-colored plates of other states are to be noted frequently in the hitherto forbidden precincts of Jersey.

Jersey is reconnoitering the touring field and the other states are prospecting around in Jersey.

For the benefit of the erstwhile foreigners, THE AUTOMOBILE has undertaken to outline a week-end trip through the hill country and lake section of northern New Jersey.

It may be several weeks before the summer resort hotels are ready to do business, but in the meantime, plenty of accommodations can be had for touring parties, practically everywhere in the section. The earliness of the season has the advantage for the tourist of allowing plenty of leisure and requiring no crowding.

Northern New Jersey has every element necessary for an unusually delightful tour. The Ramapo hills and valley, the scenic run across country to Lake Hopatcong, the spectacular features of the mountain climbing, the soft beauty of the rich valleys and the delightful vistas of all classes of scenic beauties combined, make such a trip an unmixed pleasure.

The best of it is, it is all brand new to the average automobilist.

Starting from New York on a Saturday in mid-afternoon, the tour herewith outlined contemplates a run to Hackettstown before dark and a zig-zag course through the hills on Sunday, reaching New York about 4 o'clock, or whenever the fancy of the tourist decides.

That is one excellent thing about touring in New Jersey, one can get home about when one pleases.

Crossing the Hudson at the Weehawken Ferry, which leaves from the foot of West Forty-second street and for which the ferry charge is 25 cents for a four-passenger car, fully occupied, the way leads to the top of the Palisades by a stiff grade. At the summit, there can be no question that the sky-line view of Manhattan Island is deserving of high rank as a pictorial effort. The rolling Hudson is just wide enough to wipe out the incongruities from the panorama, without robbing the picture of its characteristic wonders. The colors of the buildings appear brighter fom that distance and despite the fact that a host of architects played various parts in painting in the details, the whole is harmonious and appears just a trifle like a dream vision.

Beauty in New York's Sky Line

As far as the eye can see to north and south, the saw-tooth sky-line stretches away until lost in the distance. A big majority of New York motorists have never seen the city from this angle and it is strongly recommended that they do so at the earliest opportunity. The vastness of the metropolis makes stronger appeal to the senses as seen from the Weehawken palisades than it can do from any other viewpoint. Few persons have discovered any beauty about the New York horizon, but it is surely there if properly sought.

The route to the hills follows the Bullsferry road after the crest of the Palisades has been passed and from that excellent bit of highway the course is sharply down-grade to the tide-levels of the Hackensack meadows. The Hackensack river is crossed by a long iron bridge after leaving Homestead railroad station.

Then follows quite a long stretch across the tide-lands to the

outskirts of the pretty little city of Rutherford. The rising ground in and about this place is dotted with substantial homes, although the real millionaire colonies lie farher to the west.

Rutherford is beautiful and clean and its streets and roads are kept in excellent condition. The next important point to be reached is Belleville, which is also deserving of high praise for its generally good conditions. Montclair comes next with its lordly mansions and hosts of rich villas and comfortable homes. Road conditions in Montclair are the next thing to perfection.

Rolling country begins in earnest after leaving Montclair on the way to Morristown. Caldwell is the first important village to be encountered after traversing a country that is softly beautiful in the valley and picturesque where the hills seem to press the road out toward the floor of the valley in a series of gently rounded curves.

Through an Historic Country

From Montclair to Parsippany the road is waterbound macadam and is maintained in fine shape the year around. To the right, just before reaching Parsippany is a wonderful little lake, the shores of which are dotted clear around with bungalows, the lights from which can be seen at intervals even to the tops of the surrounding hills.

At Parsippany, the course turns south to Morris Plains, which village is really a suburb of Morristown. Morristown, N. J., is a city of historic interest to all Americans. Washington at the head of the patriot army made his headquarters there at the crucial stage of his New Jersey campaign that turned the fortunes of war against England. The very things hallowed by the use and presence of Washington can be seen at Morristown and a few hours so spent will undoubtedly prove interesting and instructive, no matter from what state the visitor comes.

West from Morristown the route passes through a portion of the vacation land of New Jersey. Hill, mountain, valley, lake and stream succeed one another with bewildering swiftness as the visitor passes Mendham, Chester and German Valley. The feature of the run, however, is the climbing of Schooley's Mountain, a towering hill 1,200 feet high. The road is very fair across the hill and the grades in consequence do not seem nearly as heavy as they are in reality. In this ascent there are several magnificent views, particularly that afforded during the swing around the celebrated Horseshoe Curve. The top of the mountain is about 1 1-2 miles across and the road is approximately level to the beginning of the northern descent. This is a severe grade extending almost 1 mile, of which 1,500 feet will require exceedingly careful driving.

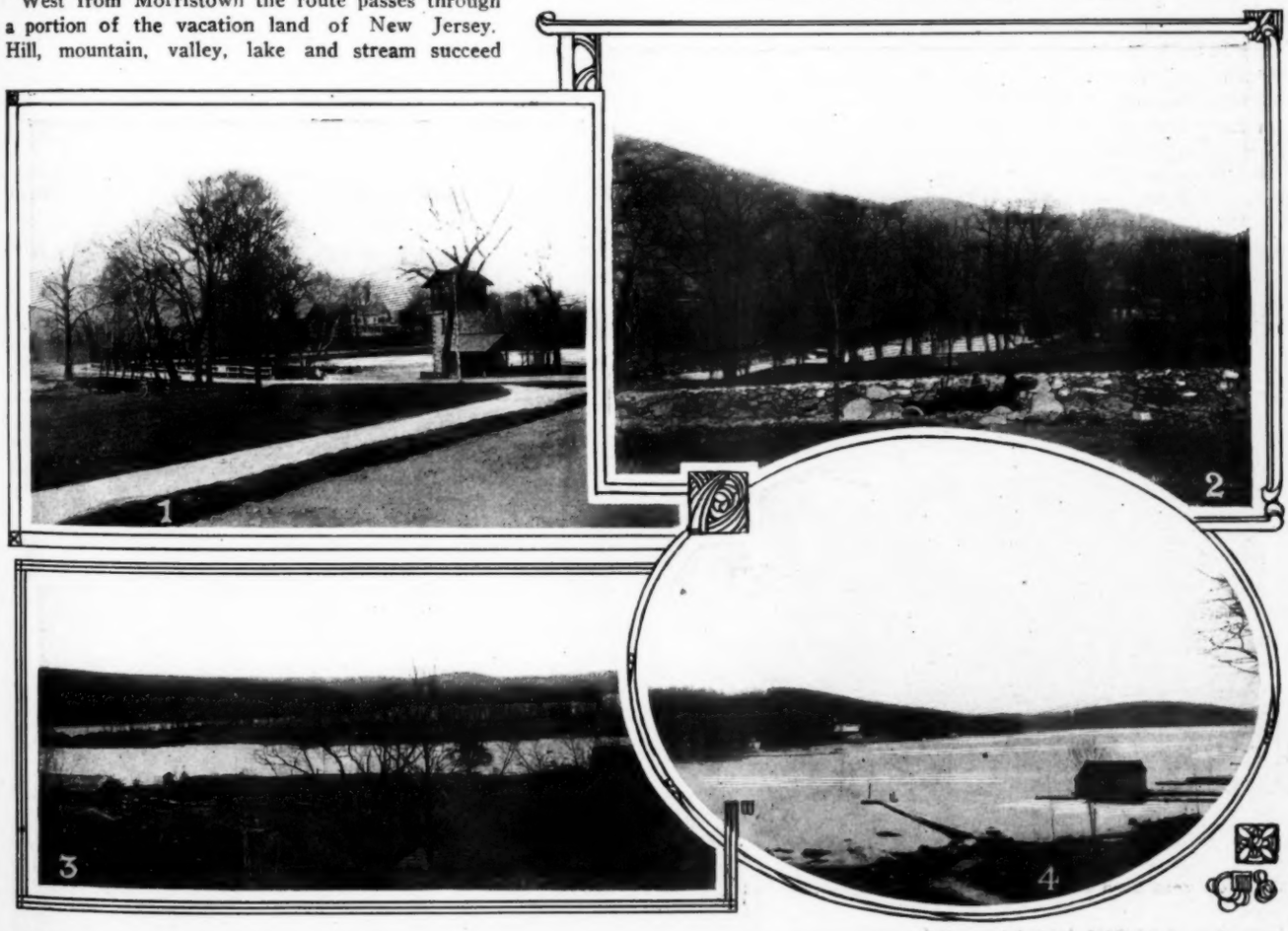
After passing the Musconetcong river at the foot of the mountain, the run into Hackettstown is short and easy.

There are ample permanent hotel accommodations at Hackettstown to take care of spring visitors and later in the season, when the summer visitor industry is in full swing, a host of casual arrivals can be handled.

The total mileage of the run to Hackettstown from New York is 58.8 miles and almost every foot of it is over fine roads. It can be made in 3 hours, but there will be much more pleasure in the trip if the speed limit is strictly observed and if 4 1-2 hours are so consumed.

A comfortable start should be made on Sunday morning, say at 9 o'clock, and in the day's run it can be guaranteed that the tourists will be pleased by following the route given below.

Taking the road to Andover, which crosses the flanking hills of Schooley's Mountain about 5 miles out, affording another series of beautiful pictures, the way proceeds through the village of Tranquility, which is surely descriptive of its character and the character of the surrounding country. Andover is less than 12 miles fom Hackettstown over very fair roads.



1—Water wheel and mill-pond near Arcola
2—Scene of varied loveliness 8 miles north of Pompton
3—One of the numerous arms of Lake Hopatcong
4—Lake Hopatcong viewed from its southern end

Turning southeast at Andover, the way leads through Cranberry Lake Station, Stanhope and Netcong to Port Morris and turning north at Port Morris runs up the east side of Lake Hopatcong, a mountain lake of superb beauty and much deserved popularity as a summer resort.

A side trip to the left from Netcong to Budd's lake may prove an interesting addition to the schedule. The mileage involved is trifling and the lake is fully worthy of a visit, although it is small in comparison with Hopatcong.

Watch the Road Signs Closely

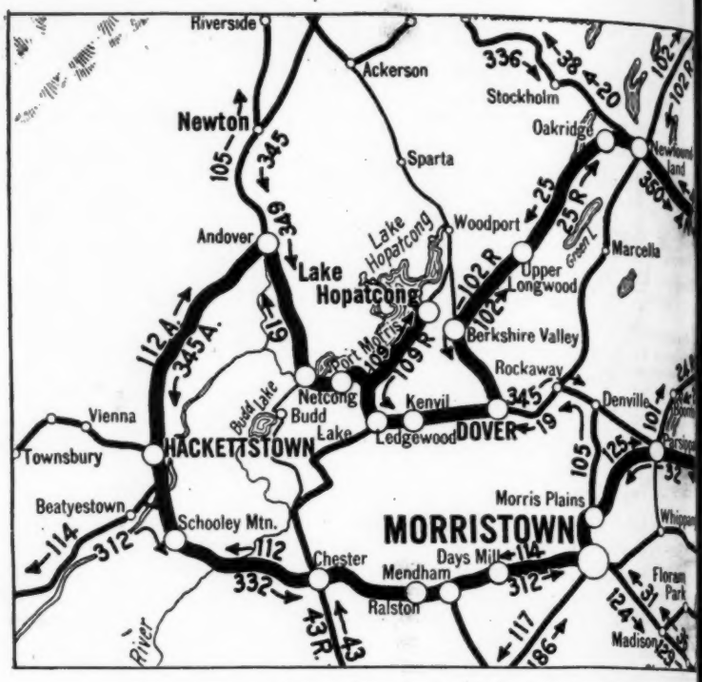
In the run up the side of Hopatcong care should be taken not to be misled by some road signs. There is one on the main road from the north, before reaching the main station at the lake that declares the right branch to be the main highway to Nolan's Point. This road should not be taken, because it leads the visitor to a section of the lake shore where he can not get out without retracing his course. In such retracing, the automobile must needs be a hill-climber of sterling performance for the grades range as high as 40 per cent. Consequently the road should be avoided.

The best road follows the windings of the lake along the sides of the hills and is nicely improved almost all the way.

As the object of the tour is seeing Jersey, rather than celerity in reaching any particular place, the next stage should be a run back to the main route to Delaware Water Gap and then turn east, picking up the course where it was left at Port Morris. Passing Ledgewood, Kenvil on fine macadam, the way leads to Dover, a manufacturing city with a considerable permanent population. At Dover, turn north and enjoy one of the prettiest runs to be found in the eastern portion of the country.

The road is dirt, most of the way, but it is graded and packed hard, practically from end to end. Berkshire Valley, a small place in the midst of what seem to be real mountains, is the first town of any moment to be met. The hills will some day be dotted with bungalows like those in some of the other sections, but today they are like the primeval wilderness. Swinging more to the east at Berkshire Valley the course is through a hilly, forest country so wild that the average New Yorker will not believe it exists until he sees it.

High in the hills, the road is somewhat rough in spots, but on the general average it is better than fair. Passing Green Lake, which lies in a bower of greenery, far below the grade of the road, the way turns east and enters Newfoundland, a thriving little community, the existence of which is unknown to almost everybody. Coming unexpectedly upon places of this sort is one of the greatest pleasures to be found in touring.



Map of week-end tour in New Jersey, furnished

Following the main road eastward the visitors pass in order Smith's Mill and Bloomingdale and then come into Pompton, which stands in the mouth of the Ramapo Valley.

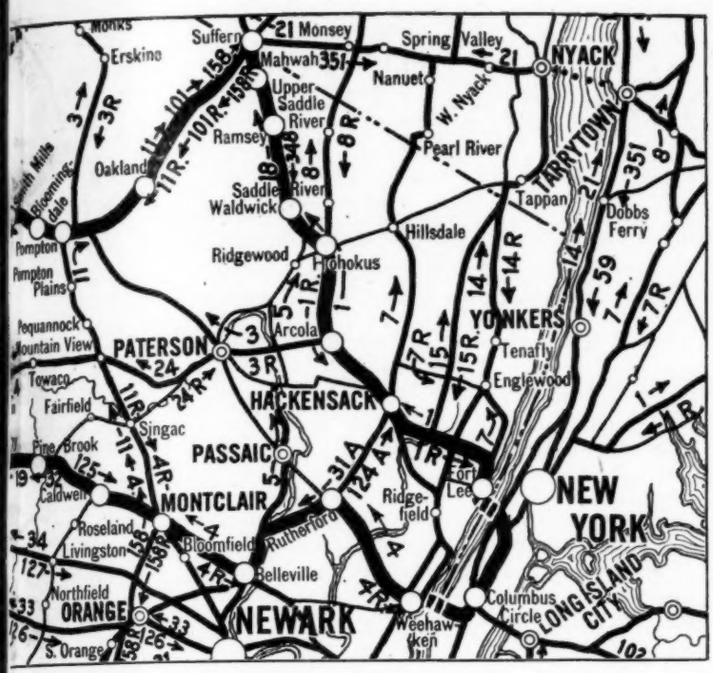
Suffern, a considerable little city, the next objective point, lies on the New York state line and is reached from Pompton by a run up the eastern foothills of the Ramapos, following the course of the Ramapo River.

There are a few poor stretches in this road, but from Pompton to Oakland and thence northward for 7 miles, there will be no complaints. The valley varies from a width of a few hundred feet to a mile or more, the walls rising from 250 feet to 500 feet, bounding the level floor through which runs a turbulent little stream.

For 5 miles of this road the country is practically unsettled, but here and there in the highlands, the graceful lines of mansions declare the fact that there are country residences of the highest class, game preserves and all the other beauties and attractions of country life to be found in the Ramapo Valley. About 1 mile from Suffern the road degenerates rapidly and there is one stretch now under construction that makes rough going.

1—Where road branches to the west, south of Suffern

2—Fine road between Hackensack and Arcola



through the courtesy of the Blue Book Company

Suffern is a gateway to Tuxedo on one hand and the northwestern lake region on the other. The valley is narrow at Suffern and the general appearance of the town is similar to many of the mountain cities of the West. Directly back of it to the north, a ponderous pile of pine-covered rock, shaped like the head of a monster elephant, cuts off the view; while to the east and west the hills stretch away to the southward at varying distances from one another.

The run back to New York by the most direct route is 25.3 miles and includes a delightful ride through Hohokus to Hackensack and a straight course to the Fort Lee Ferry. But the total mileage given for the day is only 97.2, not taking into consideration any detours and side trips.

If the party wishes to take in Budd's Lake, Green Lake, Greenwood Lake and the mountain country west of Paterson, the mileage may be increased indefinitely and on the splendid Jersey roads from 70 to 80 additional miles may be covered without exhausting the party or fracturing the speed limit.

As the first trip into Jersey in at least 5 years it will be desirable to take it deliberately and become acquainted with this delightful section in leisurely fashion.

Almost all of Saturday's itinerary is over smooth highways. In the route suggested for Sunday, there is macadam for 72 miles, the remainder being dirt road ranging from good to fair, with a very few rough spots. The dirt road was selected on account of the remarkable scenic beauty to be seen.

There is little major road construction now being done in the section described, but except on such splendid stretches as lie between Ledgewood and Caldwell and from Suffern to Edgewood there are numerous forces of road repairers at work. On the dirt roads much work is being done in preparation for the touring season.

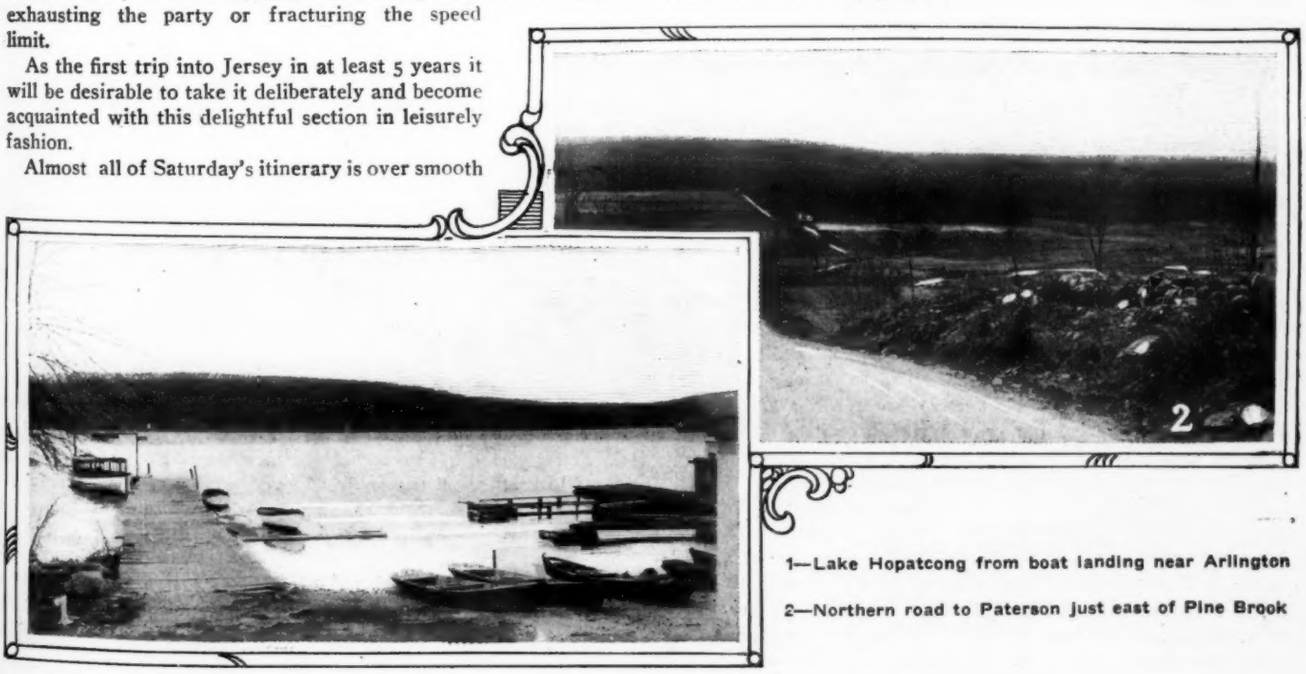
Observe Laws and Save Trouble

Two things should be carefully borne in mind by the tourist. In the first place the Jersey speed limit is not 30 miles an hour; it is 25 miles an hour. Second, the custom has been to run as close to the jail limit as possible without breaking in while touring in New Jersey, on the theory that the previous nonreciprocal law was unjust and ought to be severely agitated if not deliberately fractured. The old law is gone and the present statute is a model of liberality. Consequently the provocation for breaking the old law does not now exist. It might be added, also, that the peace officers of several of the counties are viewing automobile traffic with much careful scrutiny and that certain magistrates have announced that speed infractions will not be viewed with equanimity, specifying certain large lump sums as prospective fines for violations and hinting of straight jail sentences when appropriate under the law.

Therefore, there are two excellent reasons for a leisurely course. First, the country is strange and new and interesting. Second, if a decent regard for the law is not sufficiently impressed upon the tourist, Jersey justice may catch him.

Any good automobile can make the run described, but a sturdy hill-climber is better than a car geared for speed. Some of the grades will make the motor labor, no matter what kind of a car is used, but they can all be negotiated with a little skill on the part of the driver. On the trip described a Maxwell Special, 1912, was used with fine results.

In undertaking this pioneer trip into Jersey the party should not neglect a complete waterproof outfit, whether the car has a top or not. Spring is an uncertain season and while the start may be made in the most delightful weather, the next day may prove rainy. There is nothing that detracts from the pleasure of an automobile trip like wet clothing, and one little shower of 5 minutes' duration may rob an otherwise delightful tour of every element of enjoyment.



1—Lake Hopatcong from boat landing near Arlington

2—Northern road to Paterson just east of Pine Brook

Digest of the Leading Foreign Journals

New System of Curvograms for Distinguishing Properties of One Motor Sharply From Those of Another—Valveless Motor Figures—Highbrows a Drug in German Shops—Thin Steel Castings

BALOG'S New Test Curves—In the ever-extending use of curvograms for expressing complicated facts and their relations a graphic language is coming into existence, one which is capable of expressing several connected ideas at the same time and in a manner which appeals directly to the intuition, while ordinary language is limited to expressing ideas in sequence and draws heavily on the reader's capacity for comparative analysis. Every now and then additions to the curvogram language appear, and soon a textbook may be required for following its advancement, so that all who care may have the benefit of the facilities which it affords for understanding difficult subjects without much racking of the brain. One of the most recent and apparently quite an important contribution to the art of speaking in curves and diagrams is presented by Arthur Balog, an engineer of Budapest. While the method he proposes has been devised with especial reference to Diesel motors it is evidently applicable to automobile motors as well and may become recognized as the most practicable means for defining the characteristics and limitations of any motor—a sort of fingerprint signature identifying an industrial type of motor and its working range. He writes in substance as follows:

The great demand for Diesel motors of recent years has caused nearly all motor builders to turn to the production of this type, and the great competition which was the result called for special methods for producing these motors as cheaply as possible and yet workmanlike. Not only was production in series widely adopted, but the types of motors were often so chosen that several varieties could be produced by only varying the engine speed and the mean effective piston pressure. It is evidently possible by means of tests to gather the material which defines the working range and capacity of any one model, including herein the limits for the complete combustion of its fuel, and to present this material in the form of curves. Such curves might be called the character-curves of Diesel motors, in analogy with those terms and symbols which play such a great and important part in electrotechnics, in the design of centrifugal pumps and in other fields. These curves may be very easily drawn into suitably cross-ruled diagram blanks.

In the examination of a motor, the fuel consumption per horsepower-hour (*ge*) and the indicated mean effective pressure (*pi*) are considered the main factors. In addition, the mechanical efficiency (*Hm*), which denotes the quality of manufacture, may also be determined. All these figures are entered upon a diagram where the effective horsepower (*Ne*) is the abscissa. The different numerical values are determined for a constant engine speed; and, when several speeds are considered, the diagram will contain groups of these curves.

In diagram Fig. 1 the effective horsepower (*Ne*) is drawn as abscissa and the indicated mean effective pressures (*pi*), expressed in kilograms per square centimeter, are entered as ordinates, *pi* being considered as function of *Ne*. For each engine speed (*n*) one *pi*-curve is obtained. On the *pi*-curves those points are marked where the fuel consumption per horsepower-hour (*ge*) is the same, and when these points are connected an equal-fuel-consumption curve is obtained. Evidently these *ge*-constant curves must be closed ones and cannot intersect each other.

In the tests there is determined at each engine speed, by means of successive loading of the motor, at what piston pressure and at what fuel consumption the smoking of the exhaust gases is first observed. When these points are entered upon the corresponding *pi*-curves and connected, there is obtained what might be called a smoke limit or smoke-curve, indicating the limits within which the motor works unobjectionably with complete combustion of the fuel.

In a similar manner, the *Hm*-constant curves or curves of minimum (and yet acceptable) mechanical efficiency may be drawn into the diagram.

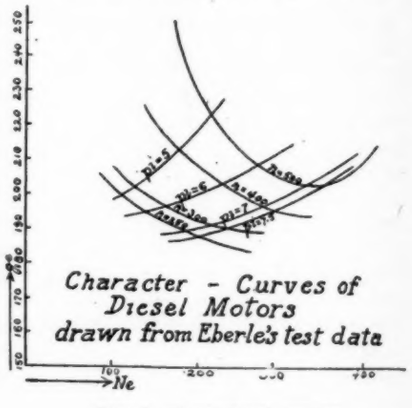


Fig. 3—pi-constant curves

Diagram Fig. 2 is drawn with the *ge* values, instead of the *pi* values, for ordinates, and *ge* is taken as function of *Ne* at constant engine speed. If those points on the *ge*-curves are determined which correspond to equal *pi* values and the connecting line drawn, curves of equal pressure are obtained. These *pi*-constant curves must also be closed curves, when completed, and non-intersecting. The smoke curve and the mechanical-efficiency curve (the *Hm*-curve) may again be construed and drawn.

In both diagrams the curves have practical validity up to the smoke curve, but not beyond it, since the operation is not here acceptable.

These diagrams, in which the author finds all which is necessary for judging the merit of a motor for any given kind of work, are drawn approximately to scale from certain experiments made by him which he is not in a position to publish, but, in order to show some diagrams drawn from data to which all have access, Figs. 3 and 4 are presented. Fig. 3 relates to tests by Eberle of a high-speed 300-horsepower Diesel motor which were published in 1908, and Fig. 4 to tests by Seiliger, published in *Zeitschrift des Vereines Deutscher Ingenieure* in 1911, page 587. Literature on the subject is very scarce, and as the tables of Eberle are fragmentary, some of the missing data, such as *pi*, have been calculated in order to get them represented in Fig. 2.

In the curves drawn from Siliger's data there is a conspicuous irregularity in the location of the point corresponding to an engine speed of 350 revolutions ($n = 350$) and a fuel consumption of 200 grammes per horsepower-hour ($ge = 200$), and it seems

that the data determining this point must have been erroneous. A curve for $ge = 200$, which is probably more nearly correct, is drawn in dots.

[The author does not otherwise comment upon the great value of the curves for indicating by the mere regularity of their conformation whether test data are reliable or not, but they would seem to possess also at this point a distinctive field of usefulness, carrying the suggestion that tables of laboratory tests always—for publication purposes, for example—should be accompanied and checked by graphic diagrams showing at a glance their degree of completeness and the intrinsic probability of their correctness.—ED.]

The smoke limit could not be entered upon Figs. 3 and 4, as the data were missing.

Considering how easily a testing engineer may construe diagrams of this nature from the data which he must at all events produce in order to determine the qualities and working field of a motor of given design, and also the great advantages which the manufacturer can derive from the possession of such diagrams, the author believes that the introduction of such character-curves in the experimental departments of factories should become general. In high-class series-manufacture the differences between diagrams taken from different motors of the same series should not be greater than the unavoidable measuring-errors in the tests, and a diagram should therefore stand as normal for a whole series—an incontrovertible signature of a given design and quality.—From *Gasmotorentechnik*, April.

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Test of Rotary Valve Motor.—Among the tests of automobile motors recently made by club and factory experts at the laboratory of the Automobile Club of France one which had for its subject the new rotary-valve motor used in Darracq cars has attracted considerable attention by furnishing authentic means for comparing the efficiency of different motors in which no poppet valves are used. The official bulletin of the club's technical committee gives a brief synopsis of the test, from which it is seen that it consisted in two trials, one lasting 5 hours and another lasting 1 hour, the latter being especially intended to bring out the fuel consumption at its best. The fuel was in both cases gasoline of a specific gravity of .709 at 7 degrees G. The motor was a four-cylinder one with cylinders of 90-millimeter bore and 140-millimeter stroke, and its commercial power rating is therefore 20 horsepower in accordance with the universally accepted formula in which the bore alone is considered. The motor design was described and illustrated in THE AUTOMOBILE, issue January 25, 1912, and it is to be noted that it was not equipped with the improved rotary valve which more recently has been devised for this type of motor and which was illustrated in THE AUTOMOBILE of April 18, 1912. It is one of the characteristics of this motor, as especially commented upon by the official testing engineer of the club, that the cylinder is closed up when the exhaust stroke is only four-fifths completed and that consequently the fresh incoming charge is always mixed with a small portion of the exhaust gas which remains unexpelled.

In the 5-hour test the motor worked at 1,262 revolutions per minute and developed 28 French horsepowers which is the equivalent of 27.8 English horsepowers. The mean cylinder pressure, it is learned from another source, was shown on the brake to be 79.67 pounds. The consumption of gasoline was 33.2 kilograms (73.2 pounds) or .23 kilogram (.52 pounds) per horsepower-hour.

In the 1-hour test the number of revolutions was 1,311 per minute, the horsepower 31.6 French or 31.2 English, the brake test reading showing a mean cylinder pressure of 86.7 pounds. The consumption of gasoline was 7.1 kilograms, or nearly the same per horsepower-hour as in the 5-hour test, and the consumption of lubricating oil was 1.205 kilograms or .038 kilograms per horsepower-hour.

The principal difference in the conditions prevailing during the two tests was that the atmospheric temperature during the 5-hour test was only 10.7 degrees C. while during the shorter test it was 15 degrees.—From *Bulletin Officiel*, January.

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Practice and Theory—So great have become the difficulties which the graduates of technical universities in Germany experience in getting suitable employment that the subject has been taken up in the *Zeitschrift des Vereines Deutscher Ingenieure*. It is assumed that the large number of very acceptable practicians turned out from the technical colleges of the second class has had much to do with the shaping of the situation, also that the great expansion and specialization of technical industries has rendered purely theoretical and general studies less valuable. The adoption of certain practical courses is recommended.

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Acid-Proof Copper Alloy—By making an alloy of about 40 per cent. cobalt and 60 per cent. tin, which is very brittle but almost perfectly acid-proof, and dissolving this alloy in copper so as to obtain a final alloy in which the copper runs from 80 to 95 per cent., a material is produced which can be worked like ordinary copper and in addition possesses the property of resisting diluted acids, even nitric acid, in a remarkable degree. The process is patented in Germany.—From *Metall-Technik*, April 27.

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An automobile bank with a capital of 410,000 kronen has been established in Vienna mainly to facilitate the purchase of automobiles on credit, the bank buying them for cash in each case and turning them over to the customers on a plan said to be followed by Banque Automobile, of Paris, and another similar institution in London. The new Austrian bank is financed by very prominent men and will undertake all other financial business connected with automobilism.—*Automobil-Welt*, April 14.

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Steel poured from an electric furnace can be cast much thinner and in more complicated molds than ordinarily, thus dispensing with special provisions for thinning the melt by means of alloys or overheating under pressure. The advantages of electric steel in this and other respects are explained by Rodinhauser in *Zeitschrift für Angewandte Chemie* for December 1, 1911.

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An electric resistance furnace by which a scrap pile may be cheaply reduced to clean pigs of it sdifferent metals has been perfected by Victor Popp of Paris.

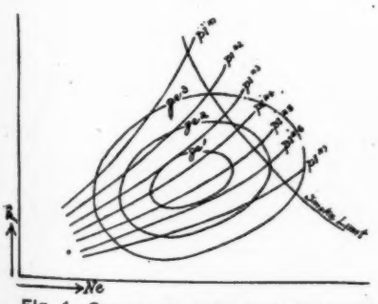


Fig. 1—Curves of equal fuel consumption (ge-constant)

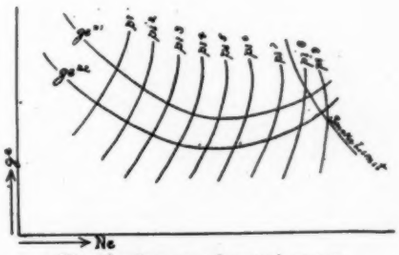


Fig. 2—Curves of equal m.e.p. (pl-constant)

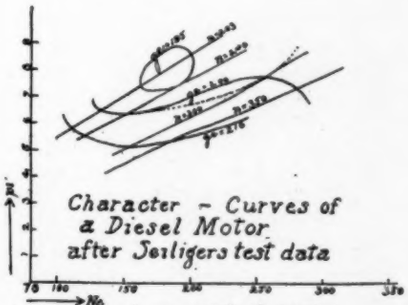


Fig. 4—ge-constant curves

Wire Wheel Again Comes to the Front

Lightness, Flexibility, Strength Against Vibration and Shock, and Tire Economy Points in Its Favor

Mode of Manufacture as Carried on at the McCue Company's Plant

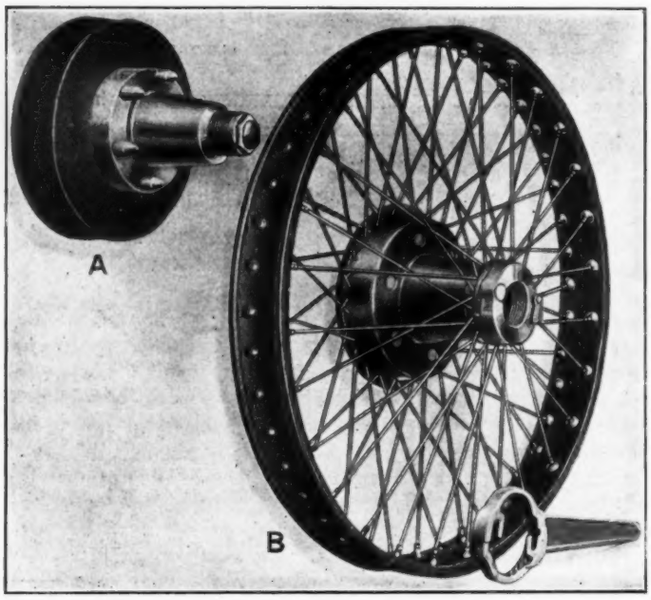


Fig. 1—McCue wire wheel. A—inner hub with brake drum, B—outer hub with wheel

HISTORY repeats itself. Wire wheels, used exclusively in automobiles when this type of vehicle first made its appearance, had to make room for wood wheels when the industry developed further. But if the wire wheel maker's art had not progressed far enough when the automobile entered the roads of the world, this art quietly developed during the last decade, and today stands ready to challenge the wood wheel industry, although the latter's products are found on an overwhelming majority of cars now in operation, especially in this country. Laboratory and road tests, as well as races of all kinds, demonstrate the virtues of wire wheels in a forcible way, so that manufacturers cannot help sitting up and taking notice of the wheel that has come back.

Wire wheels, when compared with wood wheels, show these principal points of difference: They are lighter and more flexible. Other advantages claimed for them are greater strength, both against vibration and shock, and increased tire economy. The reasons for the latter feature are that owing to the elastic wire spokes the rim starts and stops gradually, whereas if mounted on a wooden wheel it experiences more or less of a jerk in either case. Then there is the fact that wire wheels keep very cool even if rotating rapidly and are thereby enabled to radiate the heat generated by the tires, while wood retains a great amount of heat; so that in the latter case the tires are not cooled and rubber and fabric are bound to suffer from the effects of this condition.

A material difference between wire and wood wheels lies also in the utilization of the tensile strength of wire wheels as compared with the compressive strength of wood wheels. In long beams, such as the spokes represent, the tensile strength is very much in excess of the compressive strength. Furthermore, the wire wheel divides the work of transmitting torque and of resisting lateral strains into the functions of two sets of spokes, and, moreover, uses the set designed for the latter work to protect the driving spokes from shock. A final advantage claimed for wire wheels is that they are not very apt to skid.

A wire wheel properly made represents a flexible system, in which the hub is suspended in a position of stress balance. As wire wheels are made today they are easily removed and replaced on their hubs, offering all the advantages of demountable rims with a lesser weight. The heaviest type of McCue touring car wheel fully assembled weighs 16 pounds.

The wire wheel made by the McCue Company, Buffalo, N. Y., is of the double-row spoke type, there being two rows of wire spokes holding the hub suspended centrally in the axis of the rim. The relative position of the two rows of spokes is shown at II in Fig. 1, while I represents a spoke of the inner row and J one of the outer row. Owing to the shape of the hub, the inner spokes are shorter than the outer ones, but they exceed them in number, there being forty-two inner spokes and twenty-eight outer ones. The spokes are joined in pairs, or, rather, two spokes are formed of one piece of wire passing through two openings in the cast-steel hub casing and being attached at two different points of the rim. The two spokes formed by one wire thus cross at an angle, and this angle is greatest in the inner row.

How Wire Wheels Are Assembled

In the manufacture of the wheels, tension is applied to both ends of each wire and they are held under this tension by means of the nipples which hold them to the rim. The same tension is applied to all spokes so that they hold the hub in a central position, the stresses in action being tensile in the spokes, the bursting stress in the hub and the compression to which the rim is subjected. In operation the functions of the outer and inner spokes are widely different. The inner spokes I, Fig. 1, presenting short and nearly perpendicular connections between the rim and hub axis, take up the driving strains, and it is for this reason that their number exceeds that of the outer spokes.

The suspended hub is able to equalize itself to strains set up in the wheel, and the amounts of torque carried by inside and outside spokes respectively are proportional to the products of numbers and tangential radius of each set of spokes. There being forty-two inner spokes and twenty-eight outer ones, with tangential radii proportioned as about 4 to 1 (P to S), the ratio of torque carried by the two sets of spokes is as follows:

$$\frac{\text{Inner spokes}}{\text{Outer spokes}} = \frac{42 \times 4}{28 \times 1} = \frac{6}{1}$$

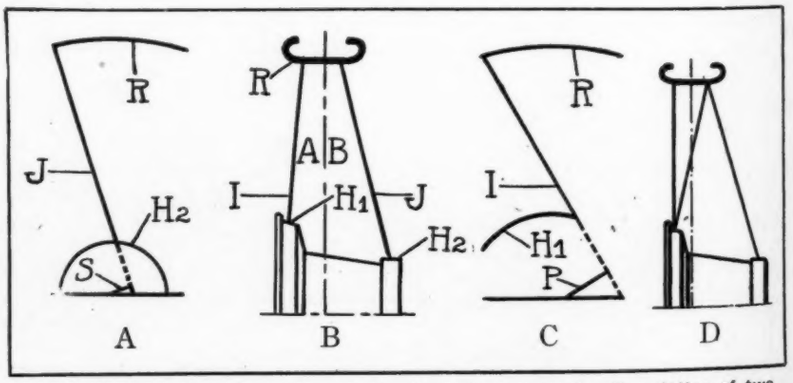


Fig. 2—Scheme of spoke arrangement. A—outer-row spoke, B—relation of two spoke sets, C—inner row spoke, D—triple-row spoke design

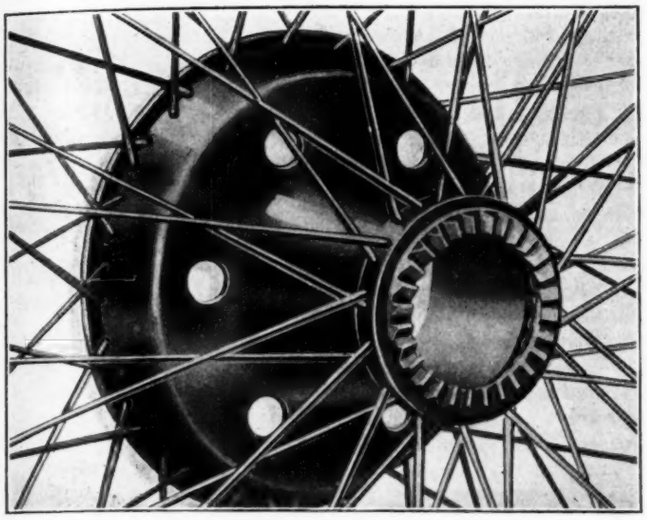


Fig. 3—Hub casing and manner of holding spoke wires to it. Note serrations for locking hub nut

Furthermore, the load-carrying capacity of the spokes depends on the cosines of angles A for the inner and B for the outer set, and since these angles are very small the cosines are very near 1. There is also a relation between the load-carrying capacity and the angle formed by a pair of spokes made of one wire, and for this reason the tangential radius of the inner spokes must not be too great.

Distribution of the Strains

The inner hub A, Fig. 2, carries the brakedrum on the rear wheels and the steering connections on front wheels. In each case the hub portion which is permanently attached to the axle is equipped with six spuds or pins which engage openings in the outer hub or hub casing B, which carries the wheel. The hub and its casing are tapered to fit, for the purpose of taking the load strains, while the driving and braking strains are taken care of by the six spuds. The inner hub is ground tapering and the outer hub shell is hand reamed after the wheel is laced and trued up to insure perfect fit of the tapers. The end of the inner hub is threaded to engage a nut on the casing portion at B, for holding the wheel in place on the inner hub. By screwing the nut on the end of the inner hub the wheel is forced onto the tapered portion. To lock the nut securely in position when on the hub a safety latch forming a bar on the face of the nut is provided. This latch extends through the nut and when the latter is turned on the hub, the latch snaps over spring-urged pawls dropping into ratchet serrations shown in Fig. 3.

The nut is screwed on or off the hub by means of a wrench, shown in Fig. 6. This wrench, on its first movement, releases the safety latch and thereby disengages the pawls from the ratchet serrations, so that the nut may be turned in either direction. When the nut is in place and the wrench is removed, the safety latch automatically assumes a position in which it holds the pawls in engagement with the serrations. In the latest type of wheel this mechanism has been so perfected that a change of wheel may be made in fewer than 10 seconds. The successive steps in removing the wheel from the hub are shown in Figs. 4, 5 and 6.

The rim normally furnished with McCue wheels is of the clincher type, but they may also be procured equipped with Q. D. rims; but the company advocates the use of a clincher rim, partly on account of its greater strength and partly on account of the greater tire economy claimed to be possible with this type as compared with the Q. D.

Front and rear wheels are made with the same size of hub taper and spuds, so that one reserve wheel carried on a car is equally applicable to any wheel. It is stated, however, by the maker that a wheel may run even if several spokes are damaged.

The McCue Company also builds a triple spoke design, Fig. 7, which is used where wire wheels take the place of wood wheels. The location of the brake drum on wood-wheel axles necessitates the introduction of a third row of spokes, as without them the tread of the car would have to be increased, which would mean augmented strain on the steering knuckle pivots. In this construction all the torque is transmitted through the vertical inner spokes, the cross spokes taking up the inside lateral strains, while the outside side strains are carried by the outer row; the latter set comprises an equal number of spokes as the outer row of the double-row design.

The material used for the spokes is steel of great ductility, and most modern alloy steels are being experimented on with a view toward possible utilization. The physical features of various materials which are at present being considered for wheel spokes are:

Material*	Weight of 1 cubic foot	Elastic limit, pounds per square inch	Tensile strength, pounds per square inch	Breaking pull of piece 1 ft. long, weighing 1 lb.	Elastic limit of that piece
Steel spokes	490	135,000	157,000	46,140	39,680
Aluminum (97½ alloy, rolled)	170	15,000	26,000	22,030	12,710
Hickory (Amer. average stock)	50	11,200	19,600	56,450	32,250
Ash (American)	39	7,900	17,000	62,760	29,170
Oak (white)	50	9,600	13,600	39,170	27,650

*Compiled by the Rudge-Whitworth, Ltd.

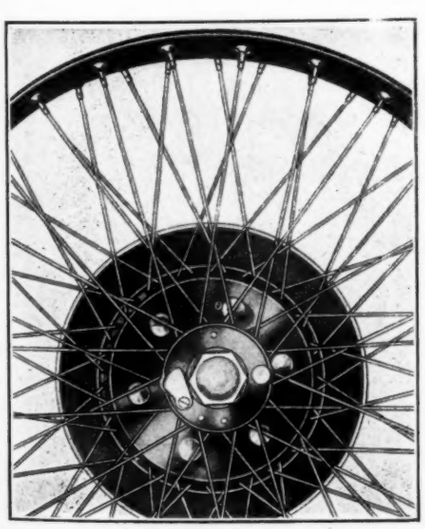


Fig. 4—Nut locked on hub with safety latch in place

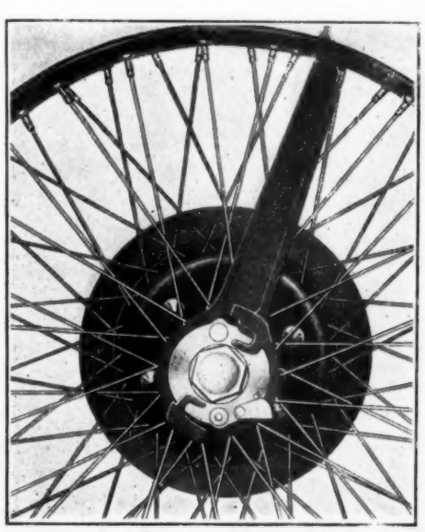


Fig. 5—Disengaging safety latch in putting wrench in place

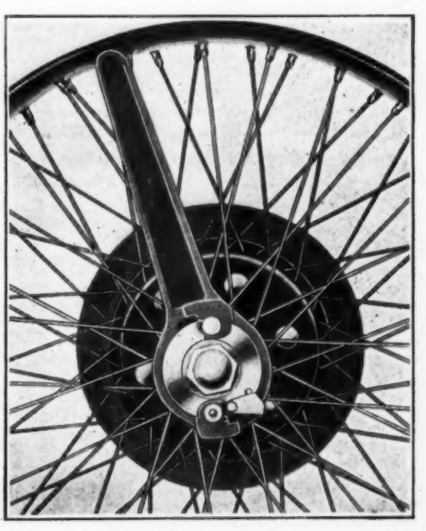


Fig. 6—Wrench in place on hub for demounting wheel

Irregular Firing Due to Overheating; Why New York Taxicab Rides Are Expensive; Worried by Differential Noise; How to Adjust a Schebler Carbureter; Starting on the Magneto; Cleaning a Car Before Painting It

The Motor Misses When Warm

EDITOR THE AUTOMOBILE:—I have been having considerable trouble with the motor of a White 30 gasoline car. I would appreciate it if you would tell me through THE AUTOMOBILE, what the trouble is.

The engine runs well and delivers all the power it should until it becomes warm, say 15 or 20 minutes after starting out. Then it begins to fire irregularly and I have noticed considerable backfiring. I had first thought that this was caused by the cylinders being full of carbon but I have had this removed twice within a week and still the trouble continues.

Akron, O. W. V. AYDELOTTE.

The fact that the trouble does not develop until the motor is warm would indicate that it must be due to something affected by the heat of the motor. This brings down the possible solution at once to the valve stems which expand materially when heated. Slack off the adjustment nut on the valve in the manner shown in the issue of May 9, page 1083. Before doing this, however, be sure that you have no broken spark-plugs and that there is a perfect flow throughout the gasoline line. It will sometimes happen that only enough gasoline will flow down to the carbureter and be in the piping to run the motor for the length of time you mention. The supply will then gradually fail and the motor will backfire. A joint gasket which has been squeezed too tight will often clog a pipe.

Are New York Taxis Expensive?

Editor THE AUTOMOBILE:—Would you kindly tell me what is generally claimed to be the cause of the high price per mile of the New York taxicab? I know that this question is a much-mooted one and that all sorts of wild theories have been advanced, but would like to know what the taxicab people themselves say about the matter.

New York City. NEW YORKER.

There are several reasons advanced by the taxicab companies for the high price per mile in this country as compared to the charges they may be briefly summed up as follows:

(1) High salaries of chauffeurs; $18.00 a week as compared with $9.00 on the other side.

(2) Garage charges higher; being about four times as much on this side as abroad.

(3) High percentage of dead mileage in New York City.

(4) Little demand for the taxicab at many hours of the day.

(5) The average New Yorker spends such an amount for rent, clothing and food that he is compelled to economize in other directions. After the theatre he takes the subway.

(6) Transportation facilities in New York are such that any part of the city can be reached quickly at a cost of 5 cents.

It is stated that the Green Taxicab Company cut the rate 50 per cent. during the day in order to determine if the volume of business was increased by such a measure. It is claimed that the increase did not justify the cut in receipts.

Car Has a Noisy Differential

Editor THE AUTOMOBILE:—I have a 1911 Abbott 30. The car has just been overhauled and, to the best of my knowledge, has not run over 10,000 miles. It makes too much noise in the differential. Could this be due to worn gears? If not, how could they be adjusted? Would cork harm the car if put in the differential housing? How much should be put in if it is used? There is a Mayer carbureter on the car and the gasoline drips from the needle valve rod. I cannot locate the leak. Where is it and how can I stop it?

Chicago, Ill. SUBSCRIBER.

The noise is no doubt due to faulty gear meshing in the differential. Disconnect the pinion housing from the rear universal joint, push the propeller shaft forward far enough to clear the pinion shaft nut and swing it down out of the way. Loosen the roller bearing adjustment nuts a turn or two and detach the complete pinion housing assembly from the rear axle housing. The parts can then be examined and the wear located. If it is a mere matter of play, this can be taken up on the bearing adjustment nuts which will be found at each bearing. If it is a worn part, this will have to be replaced immediately. Powdered cork is not recommended as a silencer in a case of this kind. It may deaden the sound, but cork has no lubricating qualities and it is not removing the cause of the trouble. The noise is a warning that there is something amiss. This can be found by taking down the part as directed, removing the grease with gasoline or kerosene and looking for the seat of trouble.

It is hardly possible to tell you where the leak is located if you cannot find it when the carbureter is right before you. On page 233 of the issue of January 18 a section through the Mayer carbureter is given which will show the location of all the joints in the carbureter. The leak must be in one of these joints; beyond that it is impossible to give any further information with the data supplied.

Adjusting the Schebler Model L

Editor THE AUTOMOBILE:—Contrary to all wisdom I have tampered with the adjustments on my Model L Schebler carbureter. It will not work well at any speed now. Last year I had perfect satisfaction with the instrument, but I started to experiment with it and as a result have put it out of commission and I have forgotten how it was adjusted when I started to change it. The carbureter came with my car, which is a Cole.

Freeport, N. Y. P. P. T.

In order to point out the different adjustment points and to identify them, the carbureter is illustrated in Fig. 2. The model L Schebler, as shown, has six adjustment points. According to the directions furnished by the makers the first adjustment should be on the auxiliary air valve A, the knurled screw being turned until the valve seats firmly but lightly. The adjustment screw B, which controls the opening at the needle valve, is then turned to the right until it stops, being careful not to use any pressure after resistance is met. Now turn the screw back about a turn

and a half and prime the carbureter by pulling up the priming lever C and hold it up for about 5 seconds. Open the throttle about one-third, start the motor and then close the throttle slightly, being careful to retard the spark. Turn the throttle lever screw F and the needle valve adjusting screw until the motor runs most smoothly and fires in all the cylinders. This will give you the correct low-speed adjustment.

Do not touch the needle valve adjusting screw B again. All the further adjustments for intermediate and high speed should be made on the dials D and E. First, adjust the pointer on the dial D from 1 towards 3, allowing the indicator to rest about half way between these two figures. Advance the spark and open the throttle so that the roller G on the track H running below is in line with the dial D. If the motor backfires with the throttle in this position, turn the indicator a little more towards 3. Or if the mixture is too rich and the motor smokes, turn the indicator back towards 1. Favor leanness of the mixture as much as possible. That is, keep the indicator as near 1 as is compatible with good results. The throttle can now be opened wide, the spark still further advanced and the same process gone through on the dial E. In making the adjustments on the dials D and E, do not turn the pointers more than half way at a time. These adjustments should be made slowly and tentatively.

Starting a Car on the Magneto

EDITOR THE AUTOMOBILE:—I have a car with a Bosch dual system. I want to change this magneto and wire up to make a high-tension magneto so that I can start directly on the magneto without the use of the batteries. Can this be done and, if so, how?

Matador, Tex. L. B. HUBBARD.

Connect binding posts 3 and 4 on the magneto with a piece of high-tension wire. Take off the dual coil and substitute a short-circuiting switch. Run a wire from binding post 2 to the switch and then to the ground. When starting, throw in the switch and crank. Binding post 3 is the collector ring brush, 4 is the center distributer brush and 2 is the grounding wire by which the primary circuit of the magneto is grounded when dual switch is in the off, or battery, position.

An Important Error Detected

Editor THE AUTOMOBILE:—I respectfully call your attention to two errors in my article, page 836, issue of April 4, entitled The How and Why of Electrical Devices Familiar to Automobilists. The errors are as follows:

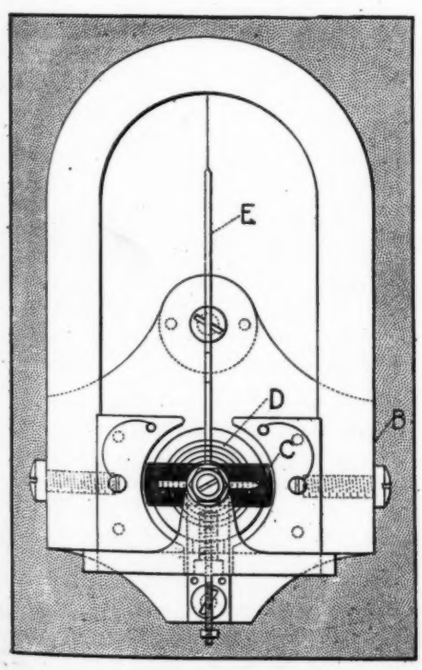


Fig. 1—Rectangular type of many-turn revolving coil

Line 2, under Filings Show Lines of Force, page 836; Fig. 7 should read Fig. 6.

Of greater importance is the correction needed to Fig. 12, page 839. In this illustration, as given, the drawing of the rectangular, many-turn revolving coil was obscure. The sketch herewith, Fig. 1, lettered the same as the former Fig. 12, shows this coil correctly. The coil is wound on a light aluminum frame which is pivoted at the top and bottom and carries the instrument pointer. The coil structure as a whole incloses a soft iron core which is fixed to the instrument. The coil is co-axial with the core and swings about freely without touching the core or pole-pieces.

New York City. JOSEPH B. BAKER.

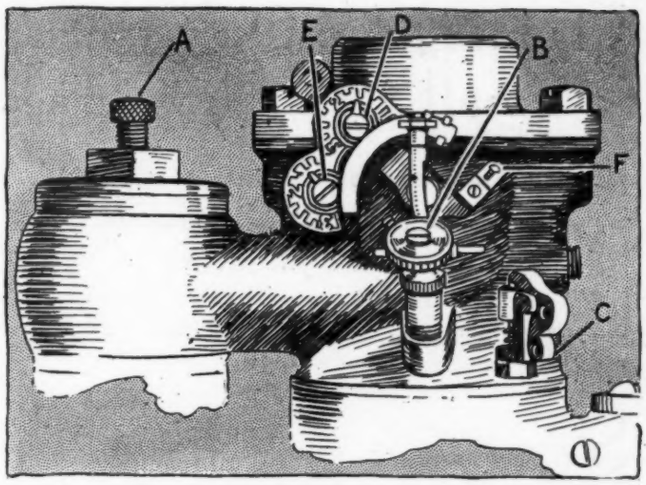


Fig. 2—Showing adjustment points on Schebler model L carbureter

Cleaning Car Before Painting

Editor THE AUTOMOBILE:—Would you kindly let me know through the columns of THE AUTOMOBILE, the following things:

(1) What is the best practice in an up-to-date automobile shop to clean the dirt and grease from the body before painting?

(2) What methods are used in factories for removing dirt from a chassis after a road test?

Toledo, O. F. L. S., Jr.

(1) Before painting the car, the dirt is washed off with water, and, after this has dried, the surface is smoothed and all the oil and grease spots are removed by rubbing the body with number 1 sandpaper.

(2) After a road test the dirt is removed from the car by a gentle stream of water from a hose. This is done as soon as the car is brought back to the factory after the run for the reason that the mud will become very hard if it is allowed to stand for any length of time. When the hardened mud is removed from the body of the car, the finish very often comes along with it. For this reason promptness is a necessity. If it is necessary to sponge the finished parts this should be done very lightly, as it does not take much effort to scratch the surface. Neither hot nor cold water should be used, a lukewarm temperature being sufficient and, if necessary, some castile soap. Dry the car thoroughly with a piece of chamois skin. Should any of the surface seem to require the addition of a little varnish, this may be made up as follows: 3 ounces oil of citronella, 1½ ounces oil of cedar, 1 pint of paraffin oil, 1 gallon of turpentine. Apply this with soft, clean cotton waste and rub dry with a clean flannel cloth.

Protecting Metallic Surfaces

Editor THE AUTOMOBILE:—Is there any varnish which you can recommend as being uesful for the purpose of protecting metal surfaces against the inroads of weather? I wish to give some brass and iron parts a coating of black which will preserve them.

Pekin, Ill. I. H. S.

A serviceable preparation may be made as follows: Melt some common asphalt in a kettle and while melting stir in crude oil until the proper varnish consistency is reached. This can be determined by taking a sample of the mixture and allowing it to cool. The consistency should be right when the varnish is cool.

Planning and Outfitting a Small Country Garage

Proper Lay-out of Plant With Reference to Space at Disposal is a Prime Requisite

Necessary Equipment, What It Will Cost and Where to Install It

SUCCESSFUL garage operation is largely a question of systematic economy. This holds true for smaller garages even more than for large ones, and therefore such an establishment requires great care in its lay-out, construction and subsequent operation. The more thought concentrated upon the system to be followed, once the building and equipment are ready for starting business, the fewer mistakes will be made and the greater will be the profit derived from the undertaking.

The type of country garage here described is designed for the storage and general care of nine automobiles, either gasoline pleasure or commercial vehicles or electric cars. Besides the space necessary for garage work the building contains a well-equipped repair shop and an office which also serves as a reception room. In the repair shop a limited supply of parts and supplies is kept, the latter being provided for the accommodation of the garage patrons. The supply stock consists of the most important accessories, tires, tire and ignition sundries, etc.

Lay-out of a Small Country Garage

The garage is a one-story brick building, 60 by 40 feet, with the longer side toward the street; the interior height is 14 feet from floor to roof, and the latter is carried on trusses 40 feet long and spaced 8 feet apart. A skylight 10 feet wide and 50 feet long, with windows, Fig. 1, illuminates the garage during daytime. Near the middle of the street side, 15 feet from one end, is located the main door, which is 10 feet wide. Entering through this door a row of four automobiles is arranged at the right, while at the left is the entrance to the garage office. Adjacent to the office door a board 3 by 3 feet is hung on the wall, on which checking forms, which constitute a part of the garage system, are kept. The office is 10 feet wide and 15 feet deep, and besides the entrance mentioned has one door leading into the repair shop and another into the garage proper, which has a floor space of 1275 square feet. The space filled by automobiles is shown by shading, and there is enough room to accommodate nine cars of 124 inches wheelbase and standard tread. The space between the dotted portions illustrates the passageway for automobiles driving to or from their assigned positions in the garage. From the garage proper a 10-foot door leads into the back yard, and adjacent to this door the washrack and charging outfit are located.

The outfit of the garage proper is inexpensive. The washrack is formed by a rectangle deepening toward its center, whence a pipe for the flushing water leads to the sewer, or other drainage system. The water is supplied either through the medium of a ready-made car washer, or through one which can be readily made from 3-4-inch standard pipe, a stuffing box, four elbows and about 12 feet of 3-4-inch water hose, at a cost of less than $8. The method of assembling the parts is shown in Fig. 3. Included in the garage equipment should be two twin jacks running on wheels, which may be used either as jacks and trucks or for a turntable, a pair of double jacks costing less than $100. One of these devices is made by the Weaver Manufacturing Company, of Springfield, Ill. Another type is the Ames jack-truck, manufactured at Franklin, Pa.

Portable cranes for garage use are very practical; they cost approximately $100. S. G. Milton & Son, Franklin, Pa.; Franklin Portable Crane & Hoist Company, Franklin, Pa., and Lafayette Engineering Company, Lafayette, Ind., manufacture cranes of this type. A less expensive equipment may be made up from a triplex block, such as is made by the Yale & Towne Manufacturing Company, of New York City, and a traveling pipe-frame running on casters, Fig. 2. This outfit can be bought for $45, the price of a Y. & T. triplex block for an 8-foot lift and 1,500 pounds load being $36, and that of the framework less than $10. Second-hand triplex blocks are also sold by dealers in used machinery and may be obtained for $25 approximately.

Where electrics are handled and only alternating current is furnished by a central station rectifying apparatus must be used for charging purposes. If the electric clientèle of the garage includes only pleasure cars a small runabout type of rectifier may be sufficient. This device is made by the General Electric

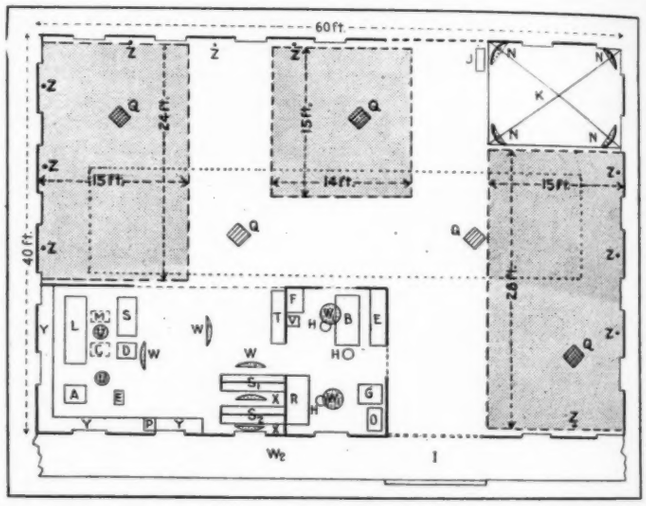


Fig. 1—Floor plan of the garage, showing location of departments, skylight and arrangement of tools and lamps

Company, and retails for $490, less 40 and 10 per cent. This outfit is designed for a current of 50 amperes at 110 volts and has a charging capacity for 25 to 32 lead battery cells, or from 25 to 44 Edison cells. A larger outfit is needed where electric commercials are handled, and this equipment is constructed for a current of 50 amperes and a voltage of from 80 to 120. This rectifier can charge 44 lead cells or 60 Edison cells and lists at $620.

Artificial illumination of the garage proper is supplied by five 100-watt Mazda lamps, equipped with 12-inch steel diffusers with white enamel finish, Fig. 4. Special lighting provision is made for washing the cars; there are four 25-watt Mazda lamps located at the corners of the washrack, and these lamps are held in Holophane D'Olier steel reflectors, directing the light to the lower part of the automobile being washed. Air valves connected to the air compressor in the shop and designed for the inflation of tires are stationed at a number of points of vantage throughout the garage.

Tool Equipment of Repair Shop

The repair shop is 25 feet long and 15 feet deep, and, besides the door connecting it with the office, has a sliding door between it and the garage proper. This door is sufficiently wide to permit of an automobile being passed through it into the shop, which also contains a small stock of raw material and repair parts stored in shelves S1, and a tool shelf T.

The equipment of the repair shop consists of a 14-inch engine lathe, a 16-inch back-geared crank shaper, an anvil, a small drill press, an arbor press and an emery wheel. Lathes are made by a number of machine tool manufacturers, and a good

lathe of the size mentioned sells for about $450 when new; but there is no difficulty in getting a good used lathe for $175 at any of the large used-machinery establishments in Chicago, New York, Cleveland, Philadelphia, Boston or Hartford; furthermore, the manufacturers always have on hand overhauled machines selling for considerably less than the original price. The same holds good of the shaper, which costs from $350 to $400 when new and $100 or $125 at the second-hand dealer's. A used drill press may be bought for about $60, an arbor press for $50 and an anvil for $25, and the remainder of the small tools which are needed in a shop for about $30.

Elaborate Illumination for Shop

The working benches Y are disposed along the repair shop walls next to the windows, and the arbor press P is attached to one of them, while the remainder of the tools are so arranged as to leave sufficient space for the automobile undergoing repair. The tools are driven by a 5-horsepower electric motor which is attached to the ceiling and connected to an air compressor. The General Electric motor of this type works at a speed of 1650 revolutions per minute and costs $120 net when new, but a second-hand motor may be obtained for half that price or less. An air compressor working at 600 revolutions and delivering 5 cubic feet per minute is made by the Gardner Governor Company, of Quincy, Ill. The air-cooled type of this compressor costs $35. Similar products are those of the Ingersoll-Rand Company and the Clayton Air Compressor Works, both of New York City. The remainder of the equipment of the repair shop is made up of shafting and belting, costing about $50.

Naturally the repair shop requires even more elaborate lighting facilities than the garage space. It is therefore equipped with five 60-watt lamps and two 20-watt lamps, all of which are of the Mazda (tungsten) type. Three 60-watt bulbs W, fitted with Holophane D'Olier steel reflectors, Fig. 4A, are dropped from the ceiling to illuminate any part of the car being operated upon, while two 20-watt lamps W1 are fitted with the same sort of reflector and are so located as to be useful in seeking

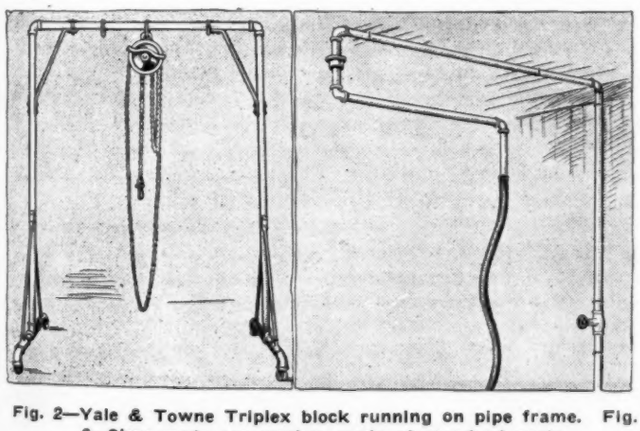


Fig. 2—Yale & Towne Triplex block running on pipe frame. Fig. 3—Shop-made car washer made of standard parts

parts stored on the stock shelves S1. Two 60-watt lamps U with Holophane Intensive glass reflectors are dropped above the lathe, planer and drill press to shed a concentrated light on the work.

The office, which is also equipped as a reception room, contains, in addition to a desk, table, chairs, safe and couch, a gasoline pump connected to a tank under the sidewalk or in the backyard, and an oil tank and pump. A Bowser gasoline pump, with the stroke adjustable for 1-4, 1-2, 1 and 2 gallons, and equipped with a 120-gallon tank, is sold by the maker for $200. The product is guaranteed by the manufacturer and therefore should be bought new rather than to take a chance with used equipment. A galvanized iron housing which fits over the gasoline pump is also made by S. F. Bowser & Company, Inc., Fort Wayne, Ind., and is sold for $45. This housing may be made at a hardware store for about $15. A lubricating oil tank and a pump capable of delivering anything up to the consistency of transmission grease is made by Bowser and sold for $80. Thus the entire gasoline and oil outfit costs $300. The office is lighted by two 40-watt Mazda lamps with 12-inch diffusers. The price of the office furniture and safe is about $100. Thus the total equipment cost should be as follows:

Lathe	$175
Shaper	125
Drill press	60
Arbor press	50
Anvil	25
Miscellaneous tools	30
Two three-wheel jacks	90
Hoist and frame	35
Rectifier, approximate	320
Electric motor	60
Compressor	135
Shafting and belting	50
Piping and air connections	20
Washrack apparatus	8
Total	$1,113

The force required for handling nine automobiles regularly and to cope with the repair work which comes in, comprises one all-around workman for the day and one for the night, and a repair worker for the day. If there is sufficient work, a repairman for the night may be required also. The owner of the garage will in the majority of cases be able and willing to do the daytime repair work, and also the office work; so that the wage item remains very small.

The system designed to take in all the garage and repair-shop operation is exceedingly simple. To carry it out, only three forms are required: a monthly checking sheet, a monthly supply-sales sheet and a repair card. In addition to these forms an ordinary ledger is used, in which each customer is given a page on which all his charges and credits are entered.

Three-Card Country Garage System

The checking sheet, Fig. 6, is 3 feet high by 11 inches wide, with nine 1-inch-wide columns, allowing sufficient space for checking one car in and out every day of the month. Thirty-one horizontal lines are ruled 1 inch apart, and the dates are printed in under the heading *Date*. Thus 1 square inch of space is provided for checking each car every day, this space being sufficient for twice checking the car out and in. The checking times are entered by the day workman above mentioned, who spends his time keeping garage and cars in shape. After the end of the month the sheet is filed for future reference.

Gasoline, oil and other supplies bought by garage patrons are noted on the supply-sales sheet, Fig. 7. If this sheet is made as large as the checking sheet it will last a full month. On the last day of the month the sheet is taken off its board, the sales are entered on the car owners' pages in the ledger and the stock records corrected in accordance with the sales records. Then the monthly bills are sent to the patrons. Where materials of any kind are sold to any but regular patrons the price and the notation *paid* is entered on the sales sheet instead of the number of the car.

For the handling of repairs the repair card, Fig. 5, is de-

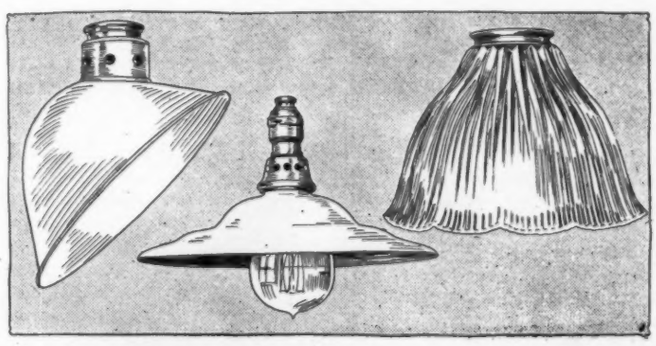
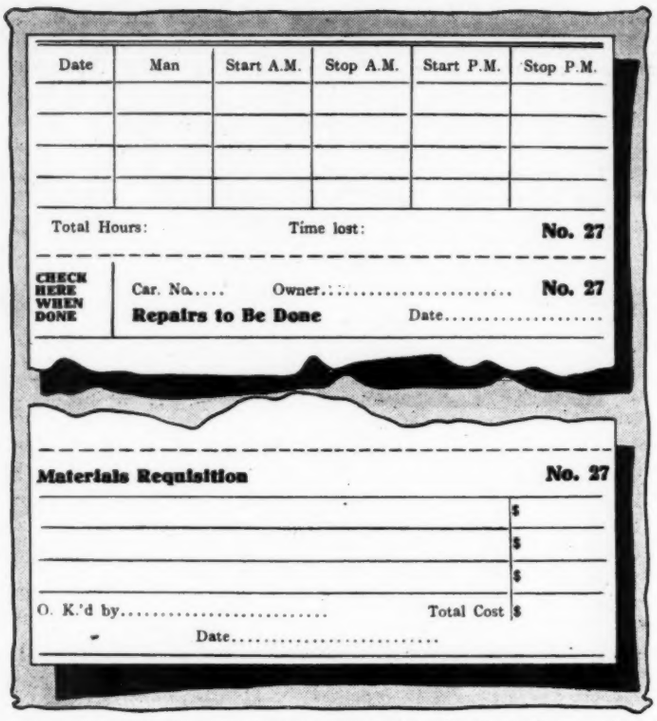


Fig. 4—Three types of General Electric reflectors. A, Holophane D'Olier steel type; B, 12-inch diffuser; C, Intense type D'Olier



Date	Man	Start A.M.	Stop A.M.	Start P.M.	Stop P.M.

Total Hours: Time lost: **No. 27**

CHECK HERE WHEN DONE

Car. No.... Owner..... **No. 27**

Repairs to Be Done Date.....

Materials Requisition **No. 27**

	$
	$
	$

O. K.'d by..... Total Cost $

Date.....

Fig. 5—Practical repair card, combining repair order, material requisition and time card of workman

signed. These cards are used in series and are numbered consecutively. They consist of three portions with perforations between. The middle portion is filled out when a car is brought in to be repaired, the name of the owner, number of car and date of the order being written on the blank. Then follow the specifications of the work to be done. The card is then attached to the automobile and accompanies it to the repair shop. The upper portion of the card is now used as a time card, the name of the workman and his starting and stopping times being entered upon it. As the work progresses the man checks every item of the work, and finally enters his total working time on the card. If it be necessary to draw upon the repair parts stock or buy material from outside, the lower portion of the repair card is used as a requisition, upon which the needed material is entered. If it is not in stock, and has to be bought, an order is made out after the requisition. In every case the cost of the repair part is entered on the requisition, which is O. K.'d by the owner before an order is sent out. The repair work being completed, a charge covering time and materials of the repair is made out from the parts of the repair card and entered on the ledger page of the car owner. Thus when the monthly bill is made out all charges against a patron come up at once.

When the repair card is no longer needed it is filed away under its number, the file being kept, with the ledger, in the safe of the office. This makes a very compact system, all parts of which are accessible to the owner of the garage at a minute's notice, thus enabling him to keep his operations on a high plane of efficiency.

Checking Sheet
April 1912

Car No.....

Date	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
29									
30									
31									

Supply Sales Sheet
April 1912

Date	Car	Material	Qu'n'ty
4—1	7	Gasoline	5 gals.
4—9	80c pd.	Gasoline	4 gals.
4—30	8	Havoline	1 gal.

Fig. 6—Monthly checking sheet for cars housed in garage. Fig. 7—Monthly supply-sales sheet kept with checking sheet

Harking Back a Decade

FROM *The Motor Review*, May 15, 1902:

The Gardner-Serpollet, which recently established a mark of 63.12 miles an hour, is a steamer rated at 60 horsepower. It has a flash boiler and four-cylinder, single-acting motor which follows the lines of the gasoline engine.

A Panhard 30-horsepower closed car is now on a tour which is scheduled to continue around the world.

Alexander Winton is hurrying to completion the new racer with which he intends to break the world's straightaway record for 1 mile.

Lack of adequate machine tools in the hands of the average repairman is one of the most difficult obstacles to be surmounted by the automobile industry. Few repair shops in the country are equipped with more than the commoner varieties of bench tools.

The program arranged for the Automobile Club of America meet, May 30-31, includes a non-stop run to Southport, Conn., and a race meeting on Staten Island. Gasoline steam and electric cars are provided for as well as motor bicycles and tricycles.

The Milwaukee Automobile Company is in difficulties and has been petitioned in bankruptcy. The company's attorney has issued a statement in which he says that the company overplayed itself in manufacturing at a time when demand for its product was slackening.

The executive committee of the N. A. A. M. has decided to submit to its members with recommendation that it be adopted the following form of uniform guarantee:

"We guarantee all goods furnished by us for 60 days following the date of their shipment, based upon the date of invoice covering the goods; this guarantee being limited to the replacement in our factory of all parts giving out under normal service in consequence of defect of material or of workmanship, without other responsibility on our part of any character.

"If the circumstances do not permit that the work shall be executed in our factory the said guarantee is limited to the shipment, without charge, of the parts intended to replace those acknowledged to be defective.

"It is, however, understood that we make no guarantee whatever regarding pneumatic tires or the batteries.

"We cannot accept any responsibility in connection with any of our motor cars when they have been altered or repaired outside our factory.

"Our agents are solely responsible to the purchaser of our goods for all the undertakings and guarantees made by them beyond those expressed above."

Carl G. Fisher, who handles Winton and Oldsmobiles at Indianapolis, has prepared a map of his territory in which he is accustomed to stick a brass-headed tack showing the location of each car placed in a new locality. The map now has tacks stuck in all the counties but two in Indiana.

Exports for the past week from the port of New York amounted to $39,500 of automobiles and parts. London was the largest consignee, with something over $32,000.

A committee of prominent New Yorkers has been organized to impress the Board of Aldermen with the disadvantages of raising the speed limit to 10 miles an hour.

The Ideal Automobile for 1913

Some of Our Readers' Conceptions of What Next Year's Car Should Be

Wants a Long-Stroke Knight Six

EDITOR THE AUTOMOBILE:—I herewith submit specifications of what I consider to be an ideal automobile for 1913:

The frame should be underslung, giving low center of gravity. It should be constructed of steel of high tensile strength and oil treated. The motor should be a six-cylinder Knight, having a 5-inch bore and a 7-inch stroke. The cooling should be by means of a centrifugal water pump.

The ignition should be by Bosch double-spark system, while the carbureter should be a Rayfield, water-jacketed and adjustable from the dash. The gasoline supply should be contained in a 30-gallon tank having a 5-gallon reserve and fastened on the rear of the chassis. It should be forced to the carbureter by pressure feed, with an air pump on the motor and an auxiliary hand air pump. There should be a 2-gallon oil supply in the crankcase with a 2-gallon reserve tank. The lubrication should be accomplished by a gear-driven oil pump contained in the crankcase. There should also be a sight feed on the dash and a dash oil adjustment.

The control should be by means of a Warner irreversible worm and sector, 20-inch steering wheel, aluminum spider embedded in a Circassian walnut rim. The spark and throttle levers should be inside the wheel on a stationary sector. The remainder of the control parts should be an accelerator, a foot service brake and a hand emergency brake.

The clutch should be of the cone type with Thermoid facing and spring plungers under the lining for easy adjustment. The transmission should be of the selective type, having four forward speeds and reverse, the direct drive being on the fourth speed. The drive should be by worm gear and there should be a floating rear axle. The front axle should be a one-piece I-beam.

The wheels should be 45 by 5 inches front and rear, with 12 and 14 2 1-4-inch spokes, respectively. The brakes should be double internal expanding types contained in 20-inch dustproof drums. All springs should be semi-elliptic, 50-inch front and 60-inch rear. The clearance should be about 13 1-2 inches, and the wheelbase 140 inches. The body should be a four-passenger type, constructed of sheet steel on an ash frame. Ten-inch upholstery should be used.

Bearings should be F. & S. annular throughout, with the exception of those in the motor, which should be Parsons white bronze, die-cast.

The equipment should include a Troy six-position windshield, Warner DeLuxe speedometer, silk mohair top, air pump run by the motor for the inflation of tires, Elba electric lighting and starting battery, foot rail, robe rail and seat covers.

Waterloo, Iowa. A READER.

Has an Unmuffled Ideal

Editor THE AUTOMOBILE:

I wish to suggest the inclosed model as an ideal car for 1913. The features of note in this car are as follows: Four cylinders cast in pairs, double-chain drive, multiple disk clutch, four speeds forward and reverse, selective type, 35-gallon gasoline tank and 10-gallon oil tank. Another feature of this car is the adoption of solid wheels. B. B. BRYAN, JR.

New York City.

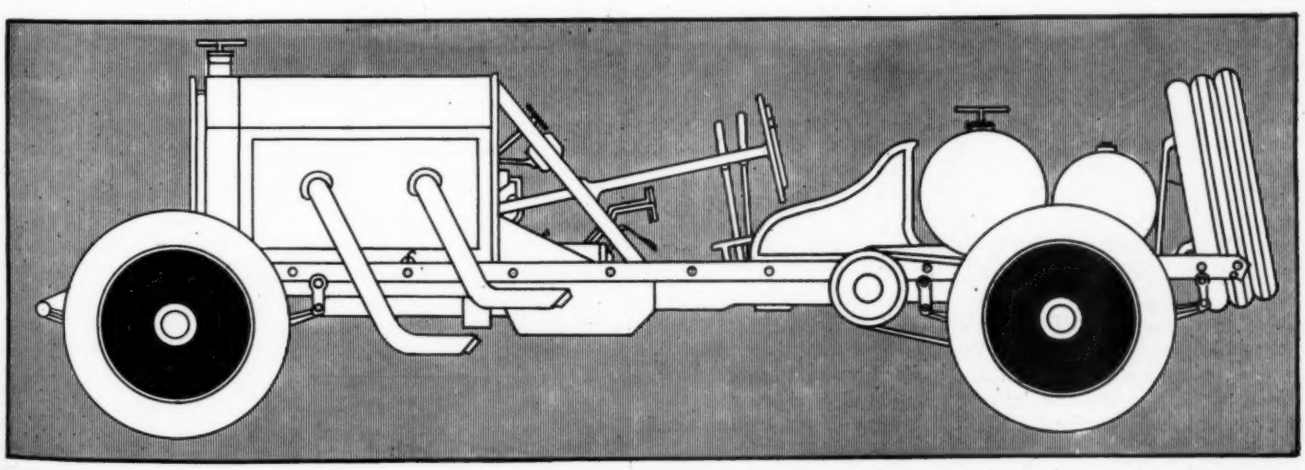
Has Criticisms to Offer

Editor THE AUTOMOBILE:

Under the head of "The Ideal Automobile for 1913" I note the letters of J. E. Shiller, of Port Jervis, N. Y., and Raymond Neighbor, of German Valley, N. J. Will say that I think it possible to get such a car as Mr. Shiller describes for much less than the price named by him, and in the neighborhood of $1700, a car corresponding in every detail to the car he would consider the perfect car.

Regarding Mr. Neighbor's letter, would say that his idea of the crankshaft bearing supported on boxes of bronze lined with Parson's white bearing metal, is a combination hard to beat. I cannot imagine why he should want two Bosch magnetos, also why he should need a four-speed transmission for this power of engine and geared to this speed. His idea of axles would, no doubt, tend to lengthen the life of the axle. His torsion tube would have to be of ample proportions and very heavy weight, which would necessarily have to be much heavier than the torsion rods. His brakes would certainly hold a high-speed fire apparatus.

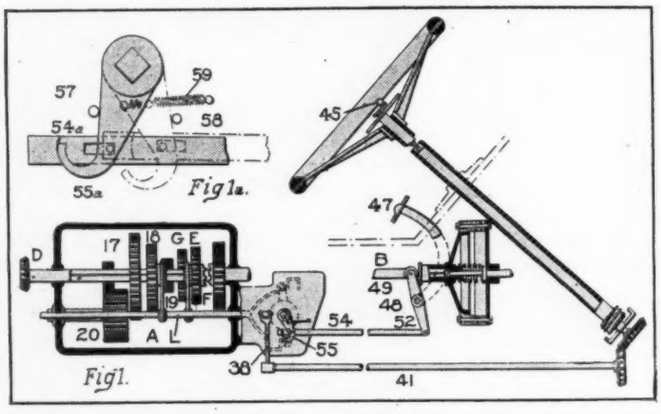
Colorado Springs, Col. REPAIR SHOP FOREMAN.



B. B. Bryan, Jr., thinks the ideal car for 1913 is a racy roadster with solid wheels

New Automatic Gear-Shifting Device

Patent About to Be Issued on a Contrivance by Means of Which Gears Are Shifted by the Clutch Spring; Does Away With Change-Gear Lever; Controlled from Steering Wheel Quadrant



Sectional view showing automatic gear-shifter applied to gearset

IT is stated that a patent is just about to be issued on an automatic gear-shifter. One of the parts of the car which is now being made an object of study by the progressive is the gear-changing mechanism. The apparatus at present employed does not seem to be in keeping with some of the other more highly developed units in many ways, therefore any suggestion tending to improve the present state of affairs should prove of interest. Following is a description of an automatic gear-shifting device invented by W. D. Hughs, of Atlanta, Ga.

Referring to sketches, A indicates a transmission gearcase containing a set of gearing of ordinary construction. B indicates a driving shaft, C a countershaft and D a driven shaft. It will be understand that the shaft B is driven by the motor and that the shaft D is suitably connected to drive the wheels of the vehicle through the usual differential mechanism. The forward end of the shaft D has a bearing in the rear end of the shaft B. A gear E is arranged to slide on and turn with the shaft D. By moving this gear forward the shaft D is connected directly to the shaft B by means of the clutch F, and by moving the gear E rearward to mesh with the gear G the shaft D is driven at an intermediate speed. A pair of gears 17 and 18 are arranged to slide on and turn with the shaft D. By moving these gears forward the gear 18 is brought into mesh with the gear 19 and the shaft D is driven at low speed, while by moving the gears 17 and 18 rearward the gear 17 is brought into mesh with the constantly rotating reverse gear 20 and the shaft D is driven slowly backward. The gear E is shifted by an arm on the rod H and the gears 17, 18 are shifted by means of an arm on a rod. The rods H and L slide in suitable ways or bearings and they are arranged parallel to the shaft D.

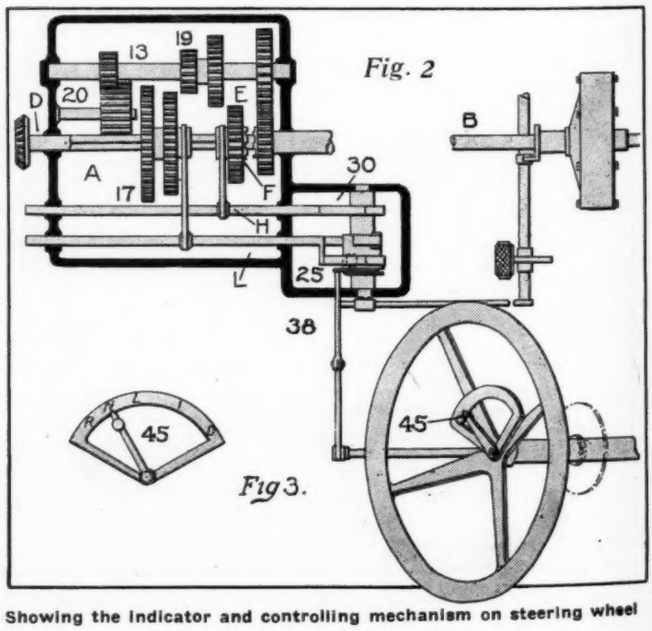
Is Controlled From Quadrant

It will be seen that by shifting the rod H forward a direct drive is effected, while by shifting it rearward an intermediate speed is obtained and that by shifting the rod L forward a low forward speed is obtained, while by shifting it backward a low rearward speed is obtained. The means for shifting these rods may now be taken up. These are said to constitute some of the novel features of the invention.

The rods H and L extend into a casing 25 which may be cast integral with the casing A or secured thereto in any suitable manner. Within the casing 25, shown enlarged in Fig. 5, are devices forming what may be termed a controller for controlling the shifting of the gears. The controller comprises a shaft 26 mounted in suitable bearings and arranged at right angles to the rods H and L. A hub or rocker 27 is arranged to slide on and turn with the shaft 26, the shaft being preferably angular and the hub provided with a corresponding angular opening. On the hub 27 are oppositely-directed rocker arms, 28 and 29. The forward end of the rod H, which is located within the controller casing 25 has an upper arm 30 carrying a yoke 31 adapted to receive the end of the arm 28, and a lower arm 32 provided with a yoke 33 adapted to receive the end of the arm 29. The arms 30 and 32 may be in the same plane as illustrated in Fig. 5. The forward end of the rod L has upper and lower arms 34 and 35 provided respectively with yokes 36, 37, the said arms and yokes being of the same shape and size as those connected with the rod H, the only difference being that the arms 34, 35 are offset as shown in Fig. 5. The relative arrangement of the rockerarms 28, 29 and the arms of the rods H and L is such that either arm of the rocker can be connected with either of the corresponding arms of the rods H or L at will, but only one connection can be made at a time. It will be evident that this result can be obtained by various arrangements of the rocker arms and the arms of the rods, the particular forms of these devices illustrated being but one of many possible arrangements.

Control Mechanism Explained

The hub of rocker 27 is shifted on the shaft 26 to engage its arms with either of the arms of either of the rods, L by the following means: A rod 38, Fig. 2, extends into the controller cas-



Showing the indicator and controlling mechanism on steering wheel

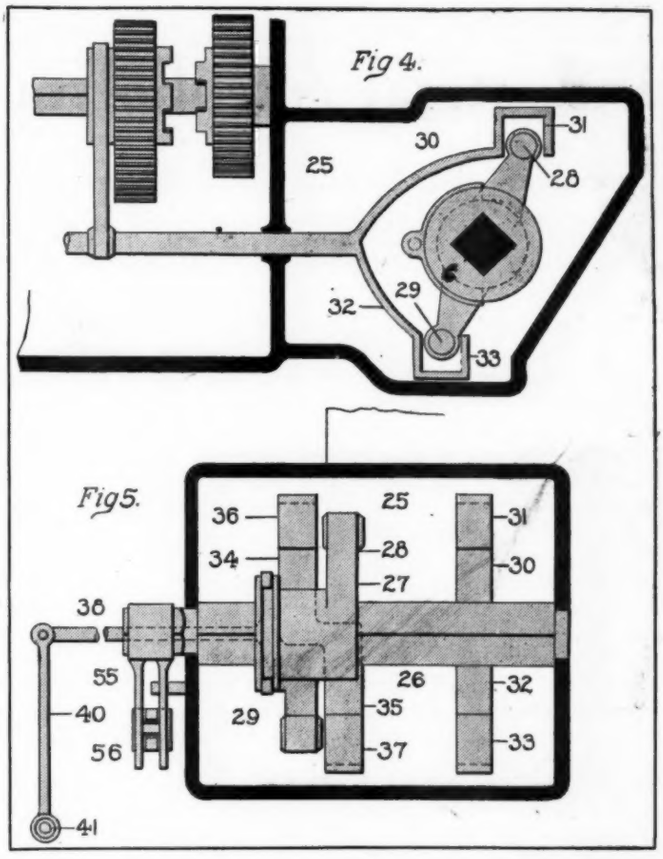
ing and is provided with a yoke engaging a groove in the hub 27. The rod 38 is connected by a link with an arm on the shaft 41, Fig. 1, extending forward to the lower end of the steering post. The shaft 41 is connected by gears with a shaft extending through the steering post and bearing upon its upper end and arm 45, Figs. 1, 2 and 3, which constitutes also an indicator of the relative arrangement of the gears in the gear casing. The different positions of the gears may be indicated upon a segment as shown in Figs. 2 and 3. It will be evident that by means of the arm 45 and the connections between said arm and the rocker 27 the rocker may be shifted to any desired position on the shaft 26.

The rocker is shown in Fig. 5 in the neutral position, in which it is out of engagement with all of the arms of the rods H and L. As viewed in Fig. 5 the arm 28 of the rocker will be moved into engagement with the arm 34 by moving the rocker to the left, and the arm 29 will be moved into engagement with the arm 35 by moving the rocker to the right. By continuing the movement of the rocker to the right the arm 28 will first become engaged with the arm 30 of the rod H and later the arm 29 will become engaged with the arm 32 of the rod 22. A movement of the rocker to the left, as shown in Fig. 5, will thus be a movement from neutral to reverse and a movement to the right will bring it successively into the positions for low, intermediate and high or direct. The corresponding positions of the arm 45 are indicated by the letters on Fig. 3.

The shaft 26 may preferably be rocked by power derived from the clutch spring, although it will be evident that a special spring may be provided for this purpose if desired. In Fig. 1 the shaft 26 is shown connected to the clutch in the following manner: The clutch lever or pedal 47 is mounted on a rocker 48 provided with an arm 49 which is adapted to move the clutch cone forward when the pedal is depressed. A forward movement of the cone compresses the clutch spring which normally tends to hold the cone in operative connection with the power-driven member 52 of the clutch. The rock shaft 48 carries a downwardly directed arm 53 to which is connected a rod 54 extending rearwardly to the controller casing. On the controller rock shaft 26 is an arm 55 which is preferably forked as shown in Fig. 5. The rod 54 has a slot which receives a pin extending through the branches of the arm 55. The arm 55 is provided with a curved portion 55^a which is adapted to engage with a head 54^a on the rod 54.

Practical Working Features

The operation is as follows: The clutch members are normally in engagement, and the arms 28, 29 of the rocker in the position shown in Fig. 1. As shown in Figs. 1 and 5 the rocker is in neutral position and not in engagement with any of the connections of the rods H and L. When it is desired to shift the gears the clutch is disengaged by means of the pedal 47, and the rod 54 moved rearward. The rod engages the pin 56 in the arm 55 and swings the arm to the rear, the curved end of the arm moving into engagement with the head 54^a as shown in Fig. 1^a. This movement of the rod is continued until the arm 55 is intercepted by a fixed stop 57. While the arm 55 is in this position the rocker 27 may be shifted to any one of its four operative positions, or to neutral, by means of the indicator arm 45 on the steering post. On releasing the clutch pedal the rod 54 will be drawn back and its head 54^a will positively move the arm 55 until the curved end of the arm moves out of engagement with the head. This will effect the desired shifting of the gears. This movement of the arm 55 and the rock shaft 26 is completed just before the clutch members 50, 52 become engaged. The loose pin-and-slot connection between the rod 54 and the arm 55 permits the clutch members to become fully engaged without further movement of the arm 55, and thus the machine starts on the gear indicated by the selected position of the indicator 45. As shown in Fig. 1^a a stop 58 may be provided for limiting the forward movement of the arm 55 and a spring 59 may be used to hold the arm yieldingly against this stop, and thus to hold the shifting gears yieldingly in any position which is desired.



Sectional view and front elevation of the controller case

The inventor claims the following: "By the use of my invention the operator of a motor car can shift the gears without bending down or changing the position which he normally occupies in steering the vehicle. Furthermore, the shifting of the gears is accomplished without any effort, especially when the clutch spring is utilized for the purpose, as it is necessary to throw out the clutch when shifting the gears regardless of the form of gear-shifting means adopted. Another advantage of my invention is that the operator may at any time observe the position or adjustment of the gears without bending his body and without taking his eye from the road more than an instant. The feature of being able to shift the gears and to observe the adjustment of the gears without moving the body and practically without taking the eye from the roadway is of great value in operating a motor car in crowded streets and on difficult roads."

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One of the latest advances in the art of extracting real, though not natural, rubber from turpentine, after the latter has been transformed into isoprene, consists in adding .2 per cent. of flour of sulphur to this liquid, according to the experience of the *Badische Anilin und Soda Fabrik*. The rubber is obtained quicker and in much larger quantity by virtue of this admixture. But a larger percentage of sulphur spoils the process.—From *Chimie Industrielle*, April.

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The Brinell method of determining hardness and tensile strength of metals by the imprint made by a steel ball under a given pressure is of no value for determining the qualities of castings, according to Dr. Schüle, the distinguished director of the testing laboratory of the polytechnicum at Zurich, who has recently published an exhaustive report on industrial methods for testing castings.—From *La Technique Moderne*, April 1.

Industrial Alcohol in Combustion Motors*

Describing the Results of a Series of Governmental Tests Comparing the Fuel Properties of Gasoline and Alcohol and Dealing with the Important Features of Alcohol Engine Construction

GASOLINE has constantly risen in price during late years, and as a result much work has been done with a view toward the substitution of this fuel by kerosene or alcohol, as soon as the price of the latter has fallen to the level of that of gasoline. The results of the research described below* indicate that as soon as very large quantities of alcohol will be produced in this country at a cheap price, more than one feature of automobile motors will have to be redesigned.

Almost any gasoline engine with a well-designed carbureter will run as well with alcohol as with gasoline, from the standpoint of operation, except for a difference in ease of starting and in certainty of operation at low speeds. Under conditions requiring widely varying speeds the engine is less certain to operate satisfactorily at very low speed when alcohol is used, unless some special adjustment is made. The only change required for the use of alcohol in a gasoline engine, if any, is in the size of the fuel passageways. The fuel needle valve must be capable of being opened twice as wide for alcohol as is required for gasoline, and the spray nozzle must not be restricted to just the size that is required to supply the needed quantity of gasoline. The fuel passageways in a carbureter can usually be easily drilled out.

Special Engines for Alcohol

By using alcohol in an alcohol engine with a high degree of compression (about 180 pounds per square inch above atmospheric pressure—much higher than can be used for gasoline on account of preignition from the high temperatures produced by compression), the fuel consumption rate in gallons per horsepower per hour can be reduced to practically the same as the rate of consumption of gasoline for a gasoline engine of the same size and speed.

An alcohol engine is as adaptable to commercial requirements as a gasoline engine, except that with the present types of carbureters the same increased difficulty in starting and in operating at very low speeds is experienced as for a gasoline engine when alcohol fuel is used. The adaptability of alcohol is such, however, that this difference, which is due to ineffective vaporization, is not necessarily permanent.

When alcohol is used in a gasoline engine with the maximum degree of compression for gasoline, the available horsepower of the engine is increased about 10 per cent. An alcohol engine with the maximum degree of compression for alcohol will have an available horsepower 30 per cent. greater than a gasoline engine of the same cylinder size, stroke and speed. Owing to the higher explosion pressures, however, an alcohol engine should be built heavier than a gasoline engine, but the weight per horsepower may be less.

Some gasoline engines may be so changed that a sufficiently high compression pressure is secured to make it possible to reduce the consumption of alcohol in gallons per horsepower per hour to an equality with that for gasoline before the engine was changed; the change, however, precludes the further use of gasoline, as it can not be used satisfactorily with compression pressures much in excess of 70 to 75 pounds per square inch above atmospheric.

*Abstracts from Bulletin 32 of the U. S. Department of the Interior, on Gasoline and Alcohol Tests on Internal-Combustion Engines, by Robert M. Strong.

The degree of compression may be most easily changed by lengthening the connecting-rod in an engine which is not counterbored and in which the shape of the clearance space is such that the piston will not strike the cylinder head or valves.

If the cylinder is counterbored, or if there is not sufficient room at the head of the cylinder to allow the piston to travel back far enough to increase the compression pressure to the amount desired, a new cylinder head should be cast with smaller clearance space.

Mixtures of Gasoline and Alcohol

The increased difficulty of starting an engine with alcohol and the increased uncertainty of operation under variable speed conditions has suggested the use of gasoline and alcohol in a double carbureter, which mixes the vapors or sprays of the two fuels with air in the usual manner. Tests on two similar engines having different degrees of compression were made with such mixtures. For the two engines twenty-six and twenty-one tests were required to obtain the best time of ignition and best mixture quality (as regulated by the fuel needle valve and auxiliary air valve) for seven different proportions of gasoline and alcohol. The results obtained are not as conclusive for the tests with the higher degree of compression as might be wished on account of affecting engine conditions which were known and recorded, but not eliminated. The results of these tests indicate that the maximum thermal efficiency for mixtures of gasoline and alcohol will vary from that for alcohol alone to that for gasoline alone, when the best degree of compression is used in each case; and that the total fuel consumption will not be less than the minimum for either fuel alone and will depend on the limiting degree of compression for each different proportion. If this be true, there is no advantage in using gasoline and alcohol together except for starting and operating under conditions of variable speed; and these advan- more suitable design of induction passageways and carbureter. Moreover, the use of gasoline in any appreciable quantity does away with many of the advantages that are obtained from the use of alcohol alone, such as safety and absence of disagree-

A similar set of experiments was made with one of the alcohol engines in which the compression pressure was about 130 pounds per square inch. In neither case could the thermal efficiency be increased or the consumption rate decreased to values better than the best obtained for gasoline alone in a gasoline engine.

Alcohol of Different Strengths

In general, the introduction of a small quantity of water with the fuel prevents preignition from too high compression or overheated parts in the clearance space. The heavy explosion pound often obtained in a gasoline engine operating under maximum load may be entirely eliminated and the running of the engine made much quieter and smoother by using a small quantity of water.

We are not limited to the use of denatured alcohol, which is about 90 per cent. ethyl alcohol, so far as the engine is concerned. Even 50 per cent. alcohol can be used, though not very satisfactorily. With this grade an engine is hard to start and is uncertain in operation; that is, the operating condi-

tions are limited. The thermal efficiency decreases rapidly with increased dilution. The rate of decrease of the thermal efficiency with decrease in percentage of alcohol, however, is not constant, but is more and more rapid as the alcohol becomes more dilute. From 94 per cent. to 80 per cent. alcohol, however, the consumption of pure alcohol is about the same, and the total consumption is almost directly proportional to the increase in percentage of water.

The maximum power of the engine also decreases as the alcohol is diluted, but, as is the case with the thermal efficiency, the percentage of decrease with dilutions between 94 and 80 per cent. is negligible. When 50 per cent. alcohol is used, however, the maximum horsepower of the engine is only 72 per cent. of that for 94 per cent. alcohol. Less cooling water is required for the engine cylinders with alcohol than with gasoline, and when the alcohol is diluted with water a further reduction is made in the required quantity of cooling water, the effect being similar to that produced when water spray is taken into the cylinder with the mixture of gasoline vapors and air. When 50 per cent. alcohol is used, scarcely any cooling water is required.

Commercial Advantage in Low Grades

A set of fifteen tests was made with a double carbureter, with which the sprays of water and alcohol were mixed. For the other set of thirty-one tests previously diluted alcohol was used in a special carbureter.

The commercial significance of the results as obtained lies in the fact that if 80 per cent. alcohol can be manufactured for 15 per cent. less per gallon than 90 per cent. alcohol it becomes a commercial advantage to use the lower grade, provided the difference in cost of handling the greater bulk does not offset the gain in cost of manufacture. It is even possible that the use of 70 per cent. alcohol or lower grades will prove to be cheaper.

Different properties limit the availability or determine the adaptability of liquid gasoline and alcohol and their combinations for use in internal-combustion engines of existing types. Gasoline is more volatile than alcohol, and the heat of combustion of a pound of gasoline is considerably greater than that of a pound of alcohol. The weight of air theoretically necessary for complete combustion of a pound of gasoline is different from that for alcohol, but the theoretical heating values of a cubic foot of gasoline vapor and air and a cubic foot of alcohol vapor and air, with just sufficient air for complete combustion in each case is very nearly the same, about 80 B.t.u.

Alcohol can be used a little more efficiently than gasoline, even in the same engine with the same degree of compression—that is, more efficiently with respect to the percentage of available heat that is transformed into useful work, but with equal efficiency with respect to the quantity of fuel consumed when the best degree of compression for each is used.

Heating Values of Both Fuels

Considering only the heating values of gasoline and alcohol, it is obvious that, if other factors are equal, the relative consumption of alcohol and gasoline will be inversely proportional to their respective heating values. The low heating value of denatured alcohol, which corresponds very closely to 94 per cent. by volume ethyl alcohol, will average about 10,500 B.t.u. per pound, while the low heating value of 0.71 to 0.73 specific gravity gasoline will average about 19,100 B.t.u. per pound. The comparison gives a consumption-rate ratio of 1.8 to 1 by weight for a thermal efficiency ratio of 1 to 1. In actual operation, however, where gasoline and alcohol were each used in the same medium-sized (10 to 15 horsepower) stationary gasoline engines without change of compression or speed, and the operating conditions, including load, were limited to the best possible for each fuel, a ratio of alcohol consumption to gasoline consumption in pounds per brake horsepower per hour was obtained as low as 0.98 to 0.59, equivalent to 1.66 to 1 by weight, or 1.45 to 1 by volume, with a thermal efficiency ratio of 28 to 26 per cent. (based on the low heating value and indicated horsepower), or 1.1 to 1. By raising the degree of compression from that best for gasoline (about 70 pounds per square inch above atmospheric) to that best for alcohol (about 180 pounds per square inch above atmospheric) the consumption-rate ratio was further reduced and a ratio of 0.7 to 0.59 pound per brake horsepower per hour, equivalent to 1.2 to 1 by weight, or 1 to 1 by volume, was obtained with a thermal efficiency ratio of 39 to 26 per cent., or 1.5 to 1.

These figures represent the best practical values that were obtained for each fuel and stated degree of compression with the equipment at hand. They were obtained under special test conditions, however, and are not commercial values; nor were they obtained offhand, even by skilled operators.

Likewise, a consumption rate was obtained as low as 0.58 pound per brake horsepower per hour for gasoline with a corresponding thermal efficiency of 28 per cent., but the compression pressure used was 90 pounds per square inch above atmospheric. With this degree of compression, it is necessary to use the weakest mixtures that will explode, in order to prevent preignition, and the load had to be reduced accordingly. Heavy loads could not be carried without excessive preigniting. Similarly, a fuel-consumption rate of 0.68 pound per brake horsepower per hour, with a corresponding thermal efficiency of 40 per cent., was obtained for alcohol, with a compression pressure of 200 pounds per square inch above atmospheric, but pre-ignitions were prevented only with difficulty and by a method similar to that used with gasoline.

Effects of Operating Conditions

The fuel-consumption ratios given above for alcohol and gasoline (1.45 to 1 and 1 to 1 by volume) are little affected by the load when the other operating conditions are limited to the best for each load. This limitation requires continual change in the time of ignition and in the quantity of fuel supplied. With the engines used for this investigation, the minimum fuel-consumption rate for one-third load was approximately 50 per cent. greater than that for best load.

For gasoline and alcohol alike, the ratio of air to fuel for the condition of minimum fuel consumption at maximum load was found to be approximately that for a theoretically correct mixture. This ratio for gasoline is approximately 15 parts of air to 1 of fuel by weight, and for denatured alcohol (90 per cent. ethyl alcohol), approximately 8 parts of air to 1 of fuel. The minimum fuel-consumption rate at best load (about 80 per cent. of maximum load) was obtained with a mixture of between 19 and 23 parts of air to 1 of gasoline by weight, and of between 9 1-2 and 11 1-2 parts of air to 1 of alcohol by weight, when used at the same compression pressures; that is, for the most economical use of gasoline and alcohol at the same compression the calculations show that from 25 to 50 per cent. excess air was used.

The average weight of fuel per charge was obtained from the fuel-consumption rate and the average number of fuel admissions per minute, from which the corresponding volume of fuel per stroke was calculated. The volume of fuel and air mixture per stroke was calculated from the piston displacement, multiplied by a factor obtained from the light spring indicator diagram of the suction and compression stroke.

From maximum load to about 80 per cent. of the maximum, with the best time of ignition, the best mixture is the weakest that will make the engine carry the load. At about 80 per cent. of the maximum load the weakest mixture that will carry the load approaches the limit of dilution with air.

When an engine is running at maximum load and constant speed only about 50 per cent. excess alcohol can be supplied without causing the engine to slow down and stop; while at half load about two and a half times the amount needed can be supplied before the engine will show any outward change in operation, except that possibly an odor of alcohol or formalin in the exhaust will indicate to the operator that an excess of fuel is being supplied.

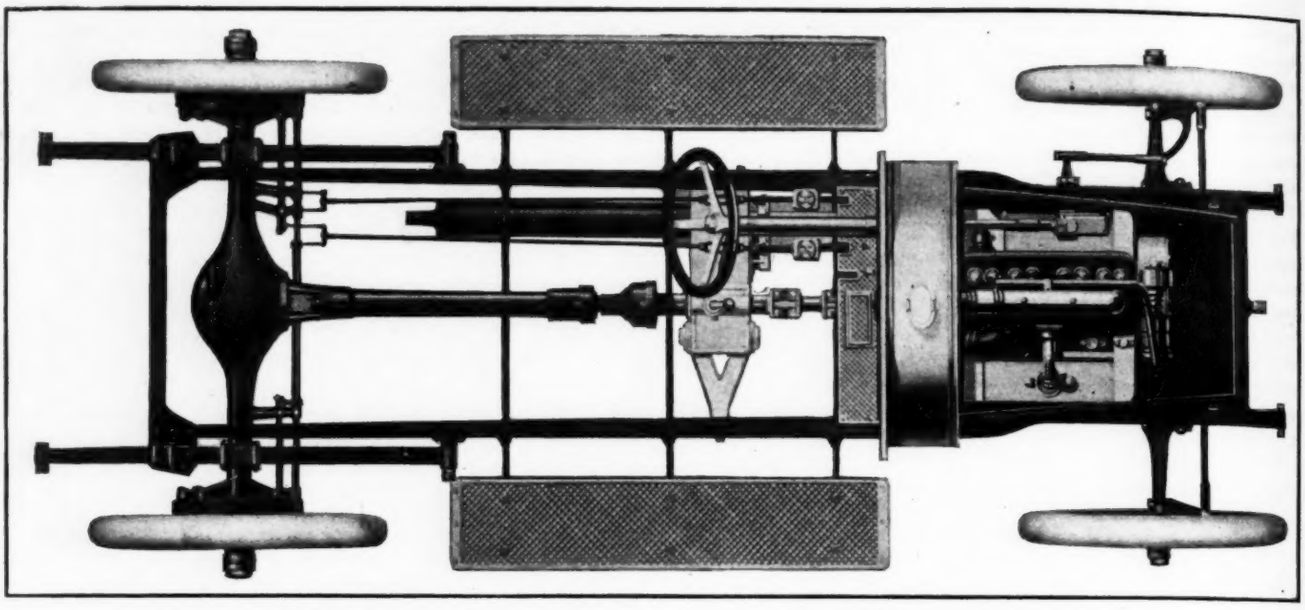

Fig. 1—Top view of Keeton four-cylinder chassis, showing radiator and transmission arrangement

Keeton Announces Six and Four for 1913 Line

Radiator in Rear of Engine, Left-Side Control and Wire Wheels on Large Car Are Features

Six-Cylinder Model Has Wheelbase of 131 Inches; the Four, 120 Inches

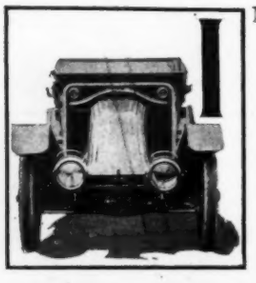

Fig. 2—Front of four-cylinder model

IN BRINGING OUT two chassis types for 1913, the Keeton Motor Company, Detroit, has deviated somewhat from usual American practice in design. The radiator is located in the rear of the engine, and the hood slopes down to the frame in front. Wire wheels are optional on the larger car, and the lines of both models are exceedingly trim. The motors of these cars are L-head designs, monoblock-cast, the four-cylinder type having a 3.74-inch bore and a 5.25-inch stroke, while the cylinder dimensions of the six are 3.75 inches by 5.25 inches. The horse-power ratings are given as 36 and 48, respectively.

Four brackets serve to hold the motor on the frame, bolts passing through their ends and frame flanges. The power plant presents a neat appearance, there being no complication, owing largely to the single casting construction.

Two views of the four-cylinder motor are shown, Figs. 4 and 6. The valves are completely inclosed within the cylinder casting itself, they being accessible through the two cover plates shown. By this construction they are made immune from dust, water and all other foreign matter. The valves themselves have cast iron heads, electrically welded to carbon steel stems, the clear opening for the passage of the gases being 1⅝ inches. The inclosing of these valves and stems tends to reduce the valve noise to the minimum.

The lower half of the crankcase forms an aluminum under pan which extends back of the flywheel and overlaps a sheet metal pan, thus completely protecting all working parts of the motor and transmission. The timing gears are spirally cut, one gear being directly mounted on the crankshaft. Three large plain bearings support the latter, which is constructed of drop forged nickel steel, 2¼ inches in diameter, while long connecting rods and offset cylinders minimize the side thrust on the cylinder walls. These crankshaft and connecting rod bearings are of special bearing metal.

A constant-level splash lubrication system is used. A plunger pump is located in the crankcase oil-well, which has a capacity of 3½ gallons. A 5-gallon auxiliary supply of oil is fed to the bearings through a mechanical hand pump, conveniently located for the driver.

The cooling is accomplished through a patented system using thermo-syphon circulation. The cellular radiator is located at the dash, as already mentioned. Air is circulated by a large blower fan mounted on the flywheel. The water outlet manifold leading to the radiator is exceedingly large, making for free circulation. The fan is very powerful and forces the air out through the sides of the radiator. The water jackets are amply large for free water flow. The cooling is independent of the car speed.

Details of the Ignition System

The gasoline finds its way to the motor through a float-feed carbureter of automatic type. It is provided with a warm-air intake which is intended to assist in the vaporization of the fuel. The gasoline tank capacity on the four-cylinder touring car is 19 gallons, including 4 gallons reserve, while on the roadster it is 30 gallons, including 5 gallons reserve.

Ignition is accomplished by either an Eisemann or a Bosch dual, high-tension magneto having fixed spark. A 6-volt, 80-ampere-hour storage battery furnishes the auxiliary current for starting the car. The magneto is very accessibly mounted on a transverse shaft in front of the motor. In setting the spark in a fixed position the manufacturer first determines the point at which it gives the most satisfactory results in efficiency and fuel consumption individually for each car. This practice is extensive abroad, the operation being automatic and doing away with the spark lever on the steering wheel.

The clutch is composed of 40 cone-shaped steel disks, 8 inches in diameter. It is incased within the flywheel and runs in oil. The drive is accomplished through bevel gears and propeller shaft. One universal joint is placed in the transmission and

renders the drive straight when the car is under load. A torque tube runs concentric with the propeller shaft from the gear case back to the front side of the differential housing.

The transmission gear case is mounted amidships of the frame, and it is bolted to it at three points. A view of the gear box with its cover removed is shown in one of the illustrations. The single support fastens to the frame on the right side, as seen in the chassis view at the top of the preceding page. The transmission gears and their shafts are constructed of chrome vanadium steel, and they are mounted on large annular ball bearings. The gears are designed for three speeds forward and a reverse.

Continuing back to the rear axle, this member is seen to be of the floating type having a pressed steel case. The drive shafts, 1⅜ inches in sectional diameter, are made from heat-treated, chrome-vanadium steel. Large annular bearings are used throughout this rear member.

The front axle is a single-piece drop forging of I-beam section of heat-treated, chrome-nickel steel. Large annular ball bearings are used here also.

All units of the chassis are distinct from one another and any can be removed without disturbing the others. This feature has a bearing on the cost of upkeep and should not be lost sight of in all modern automobiles.

No subframe is used in this chassis, the main frame being of channel section inswept at the front. It is of pressed steel and has a 5-inch kick-up in the rear.

Spring Leaves Are Very Thin

Springs are 2 inches wide, the front ones being semi-elliptic, 36 inches long, while the rear are 50 inches long and three-quarter elliptic. They are made of alloy spring steel, and are composed of a number of very thin leaves, giving strength and resiliency. Being very long, they become nearly flat under load, this design being used with the idea of giving easy action over rough roads. The spring bolts are hardened, ground and provided with large grease cups.

Service and emergency brakes are both on the rear wheel hubs. They are internal expanding, as shown in Fig. 3. They are cam-actuated and have 2-inch faces. The service brake is 16 inches in diameter and the emergency brake 12 inches. Both brakes are lined with Thermoid, being double-acting through equalizers mounted directly on the rear axle.

The gear ratio of 3½ to 1 is standard on the Keeton cars, except that 3 to 1 ratio is furnished on the roadster if desired.

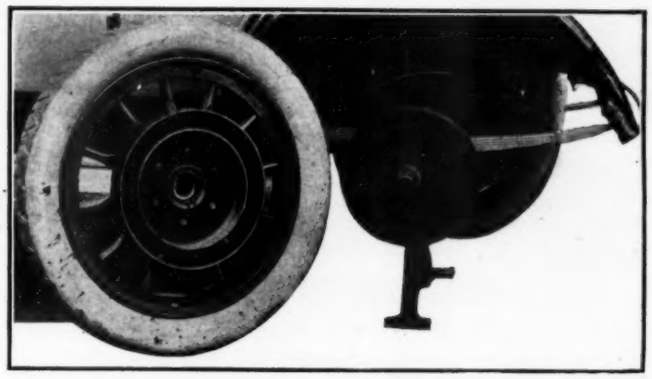

Fig. 3—Rear wheel removed to show both internal expanding brakes

The speed of the car is said to be from 3 to 60 miles an hour on high gear.

Left-side drive is a feature of the car. The arguments in favor of this as advanced by the company are that it allows the passenger to alight at the curb without necessitating walking around the car. The driver can see ahead when passing a vehicle going in the same direction and he can also gauge his passage room when going by a vehicle traveling in the opposite direction.

The gear shift or control lever is placed in the center instead of at the side. In shifting from one speed to another, the top of the lever does not move over 3 inches. The clutch and service brake are connected to the left pedal, and there is a ratchet arrangement so that the brake may remain set if desired. The emergency brake is operated by the pedal on the right. An accelerator on the footboard operates to control the gasoline supply in connection with the lever under the steering wheel. The wheel is 20 inches in diameter, and the steering mechanism is of the worm-and-gear type.

Wheels are of the artillery type, 36 inches in diameter. The spokes are 1¾ inches in diameter and constructed of selected second-growth hickory stock with large hub flanges. The rear spokes are bossed and bolted to the brake drums. Twelve spokes are used in the rear wheels and ten in the front. With these 36-inch wheels the car is given a road clearance of 12¼ inches under its lowest point. However, the construction is such that the car has a low center of gravity, preventing side sway and making for steady driving at high speeds. Demountable

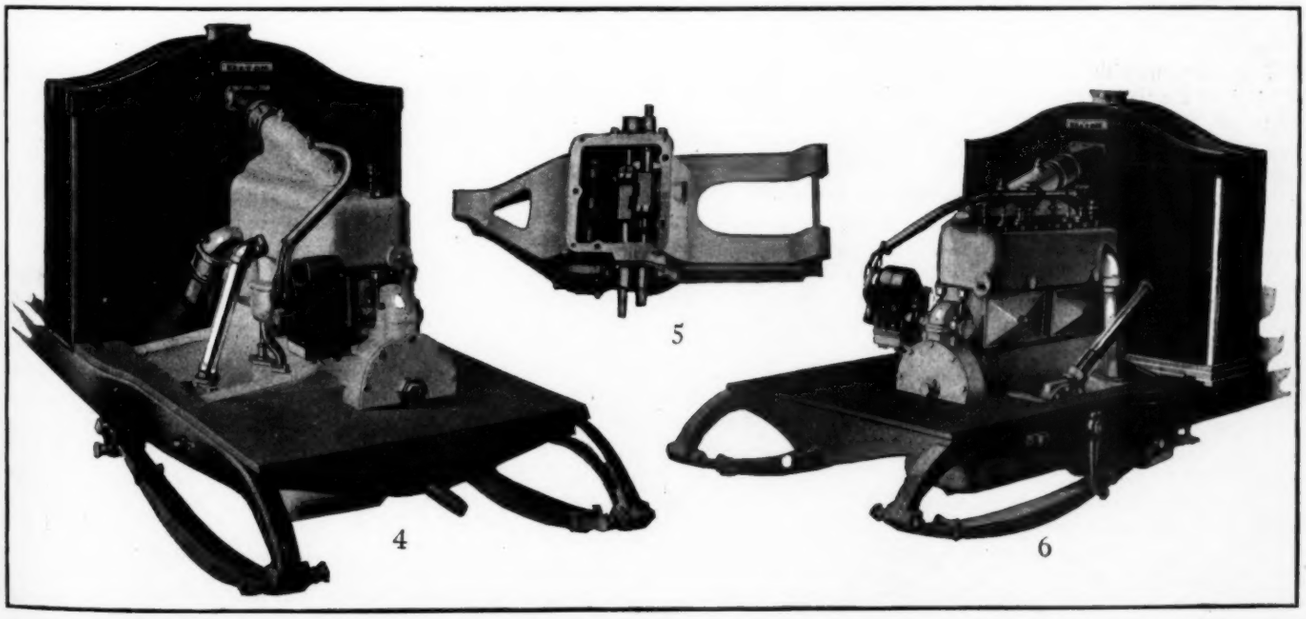

Fig. 4—Right side of Keeton four-cylinder motor

Fig. 5—View of gear-box

Fig. 6—Left side of Keeton four-cylinder motor

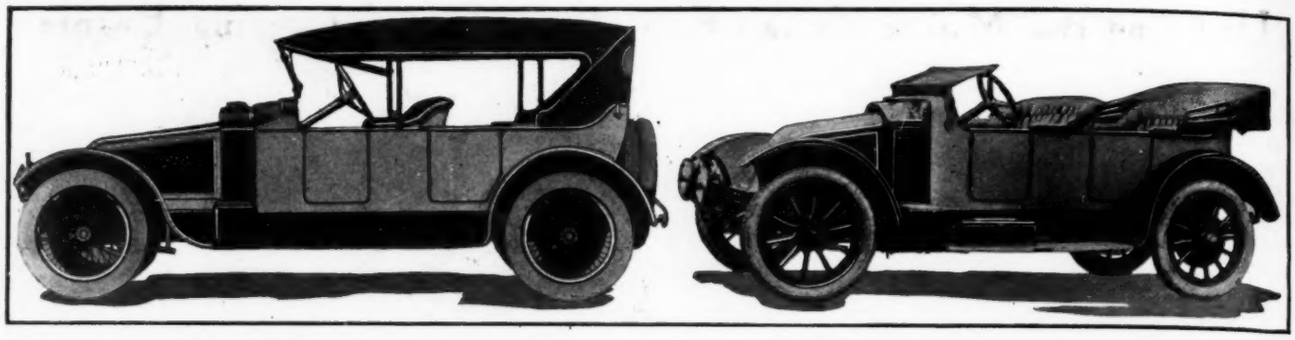

Fig. 7—Six-cylinder Keeton touring car with wire wheels

Fig. 8—Four-cylinder 1913 Keeton touring car

rims are furnished, in addition to which one extra rim is added as standard equipment.

Rear tires are 35 by 4½ inches and front tires are 34 by 4 inches. Double tire irons for spare shoes are carried between the springs in the rear of the touring car and coupé models, while the roadster model has provision for extra tire equipment on top of the rear deck.

The wheelbase of all the four-cylinder models is 120 inches, and the weight when fully equipped is about 2750 pounds for the touring car and 100 pounds less for the roadster. The tread is standard at 56 inches. Owing to the narrowing of the front part of the frame it is claimed that the car will turn in an exceedingly small radius.

As to bodies, there is the fore-door touring car model which has very rangy lines and which is large enough to seat five passengers comfortably. Then there is the fore-door roadster, which seats two passengers, and in addition to having a tire deck has space for carrying two suit cases. The coupé has space for three passengers and is handsomely finished.

These bodies are of sheet steel over wood frames. All panels of the coupé are of cast aluminum. The touring car and the roadster are known as the Riverside and the Meadowbrook models, while the coupé is called the Tuxedo type. The prices range from $2,250 to $2,600.

The standard equipment of these Keeton machines consists of self-starter, top and cover for same, rain-vision windshield, 60-mile speedometer, gas headlights with gas tank and electric spark lighter on the dash, electric side lights and combination oil electric rear light and license holder, storage battery, electric horn, demountable rims with one extra, tire irons for carrying two tires, auxiliary oil and gasoline tanks, full set of tools, pump, jack, tire repair outfit, robe rail and foot rail. Large tool boxes are mounted on the front end of the running board.

The upholstery in these machines is of first grade leather, long grain and having a black, glossy finish. It is stuffed very deep with hair, and there are large pockets for carrying gloves, books, and so on, in each door.

The same general characteristics are to be found in the six-cylinder models, all three of which are mounted on the same chassis. These cars are electrically lighted with dynamo, self-started, have left side drive, center control and the full equipment as enumerated for the four-cylinder types.

The wheelbase is 131 inches, and the touring car type is shown in Fig. 7. Practically the same design features predominate in the six motor, the valves being 1¾ inches in diameter and inclosed, the six cylinders being cast in one block. The magneto is mounted in front in the same way as the four. The rear position of the radiator and the sloping hood features are also in evidence.

All chassis details are identical, with the exception of the increased length.

These models are also in three styles: the touring car, roadster and coupé types. The model names are the same as those applied to the fours.

Wire wheels are made optional on the six-cylinder model, lending to this car a distinctly foreign appearance.

How to Make Statuary Bronze Finish for Automobile Parts

IN connection with the subject of enameling the brass parts of the automobile, the suggestion has recently been repeated from various sections that the famous statuary bronze finish now extensively used in railway passenger cars of the best class would make an appropriate and popular finish for these parts. Some of the statuary bronze effects show a beautiful satin finish and are very durable.

The methods and formulas for producing this finish, however, call for special equipment. Light or yellow brass which contains but comparatively little copper in its composition will necessarily have to be treated to a copper electro-plate process prior to oxidizing. This electro-plating is usually done in a solution of carbonate of copper, cyanide of potassium and carbonate of soda, into which copper anodes are placed. A dynamo will be necessary to do the plating.

The process of oxidizing consists of dipping the brass parts in the following solutions:

Solution No. 1—In one gallon of water put 1-2 ounce sulphuret of potassium.

Solution No. 2—In 10 gallons of water put 1 pint sulphuric acid.

Keep the No. 1 solution hot by immersing the crock containing it in a vat or kettle of hot water. Use the No. 2 solution cold.

First clean the parts in a potash solution, and after rinsing off thoroughly, dip immediately into solution No. 1, from which remove to solution No. 2 at once. After removing from this second dip, if the parts have reached the desired shade, run them over a scratch brush wheel revolving on any good buffing lathe. This treatment brings out the desired uniform effect.

It will be understood that various shades may be developed as desired, first, by repeated dipping in the solution, and, second, specially treating the brass previous to oxidizing. Also various effects may be produced by sand blasting or matting on a stiff steel wire wheel brush operated at high speed Follow this treatment by using the solutions No. 1 and No. 2 and finish off with the scratch brush

—

THE LAST TOLL ROAD has been abolished in England, the privilege of operating it being surrendered to the public for the sum of £1,000 sterling.—*Exchange.*

Utilizing the Motor Exhaust

An English Inventor Devises a Novel Scheme to Help the Water Circulation

The exhaust of the automobile motor has been put to still another use. J. Owers, of London, England, has patented a device which is intended to assist in the cooling-water circulation through the utilizing of the ordinarily wasted exhaust gas energy.

The new appliance is intended to be inserted in the water system, as shown at B, Fig. 1, between the water outlet manifold and the radiator A. Connection is made at D with the exhaust manifold C, showing that there is very little apparatus necessary to the use of the new invention.

The details of the device are shown in Fig. 2. It is a simple form of injector. The exhaust gases from the manifold enter at G and in escaping pass through the contracting nozzle E, thus impinging upon the water which enters from the water outlet manifold at M. The velocity of the exhaust gases is increased through the contraction of the nozzle E, and in striking the water considerable force is exerted, tending to force it out through the opening N and into the radiator. The nozzle is provided with a valve or tap F for controlling the pressure of the gas injecting at E.

Tests have been conducted with the new device which go to show that by regulating the valve F the water may be made to flow out of the pipe at N either in a very gentle stream or in a very powerful jet. In one test, when the valve was wide open, the jet was made to throw for a considerable distance. The exhaust gases which pass through the injector and into the radiator leave it immediately though the radiator overflow pipe, preventing the heating of the water and the accumulation of any very high pressures.

The apparatus would seem to be equally well adapted to forced-circulation systems and to thermo-syphon systems, no head of water apparently being necessary if it is used in connection with the latter. Its possibilities are great when its ease of attachment, simplicity of construction and consequent small cost are taken into consideration.

Speed Legislation a State Function

WASHINGTON, D. C., May 11—In the opinion of one of the most distinguished attorneys of the country and a former Attorney-General of the United States, W. H. H. Miller, of Indianapolis, Congress has no authority to legislate as to the speed of automobiles, this being entirely a state, or local, function. This opinion has been ordered printed in the *Congressional Record* at the suggestion of Senator John W. Kern. The opinion was offered in connection with a discussion in the Senate of measures bearing on the prevailing speed mania.

Calendar of Coming Events

What the Coming Months Have in Store for the Sport-Loving Automobilist

Shows, Conventions, Etc.

May 16-19	New Orleans, Annual Meeting National Good Roads Congress.
June 5	New York City, Annual Orphan's Day.
June 17-22	Milwaukee, Wis., Convention and First Annual Show, National Gas Engine Association.
June 27-29	Detroit, Mich., Summer Meeting of the Society of Automobile Engineers.
July 10-20	Winnipeg, Man., Canadain Industrial Exhibition.
July 12-14	Logan, Utah, Fourth Annual Intermountain Good Road Convention.
July 22-26	Detroit, Mich., Cadillaqua Week.
Sept. 23-Oct. 3	New York City, Rubber Show, Grand Central Palace.

Race Meets, Runs, Hill Climbs, Etc.

May 17-18	Denver, Col., Track Meet, Colorado State Automobile Association.
May 21	Denver, Col., Sociability Tour from Denver to Indianapolis, Ind. and return.
May 25	Washington, D. C., Reliability Run.
May 30	Indianapolis, Ind., Speedway, 500-mile race.
May 30	Salem, N. H., Track Races, Rockingham Park.
June	Portland, Me., Hill Climb, Maine Automobile Association.
June	St. Louis, Mo., Reliability Run, Automobile Club of St. Louis.
June 1	Philadelphia, Second Annual Contest for the Fletcher Cup, Automobile Club of Philadelphia.
June 6	Washington, D. C., Reliability Run, Washington *Post*.
June 8	Narberth, Pa., Track Races, Quaker City Motor Club.
June 20	Algonquin, Ill., Annual Hill-Climb, Chicago Motor Club.
June 20-22	Portland, Me., Reliability Run, Pine Tree Motor Contest Association.
July 3-5	Belle Fourche, S. Dak., Second Annual Track Meet.
July 4	Petersburg, Ind., Track Meet.
July 4	Riverhead, L. I., Road Race.
July 4-5	Taylor, Tex., Track Meet, Taylor Automobile Club.
July 4-6	Old Orchard, Me., Beach Meet, Old Orchard Automobile Association.
July 5-6	Tacoma, Wash., Road Races.
July 15	Milwaukee, Wis., Reliability Run, Wisconsin State Automobile Association.
Aug. 8-10	Galveston, Tex., Beach Meet.
Aug. 23-24	Elgin, Ill., National Stock Car Races, Chicago Motor Club.
Sept. 2	Indianapolis, Ind., Track Races, Speedway.
Sept.	Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
Oct. 7-11	Chicago, Ill., Reliability Run, Chicago Motor Club.
Oct. 12	Salem, N. H., Track Meet, Rockingham Park.
Nov. 6	Shreveport, La., Track Meet, Shreveport Automobile Club.

Foreign

May 26	Barcelona, Spain, Cup of Spain Road Race, Automobile Club of Catalonia.
May 26	Sicily, Targa Floria.
June 15-23	Vienna, Austria, International Tour, Austrian Automobile Club.
June 25-26	Dieppe, France, Grand Prix de France, Automobile Club de France.

American Cars in Traveling Show

To show American products at first hand to the citizens of South American countries, a ship is being fitted out in New York Harbor and will sail, according to announcement, as soon as the exhibit can be prepared and installed. The enterprise is in charge of the American Manufacturers' Export Association. It is expected that several varieties of automobiles and numerous accessories will be included in the cargo.

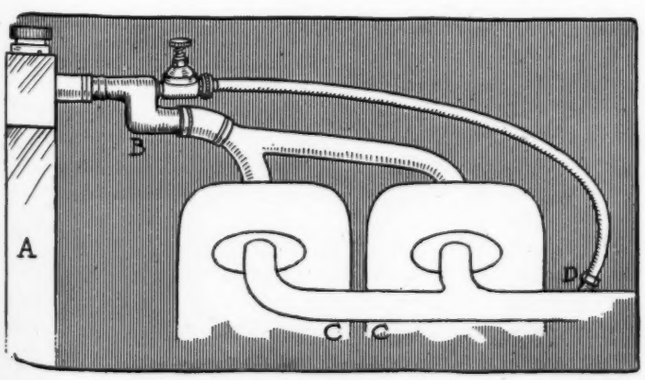

Fig. 1—Showing method of applying water-circulating device

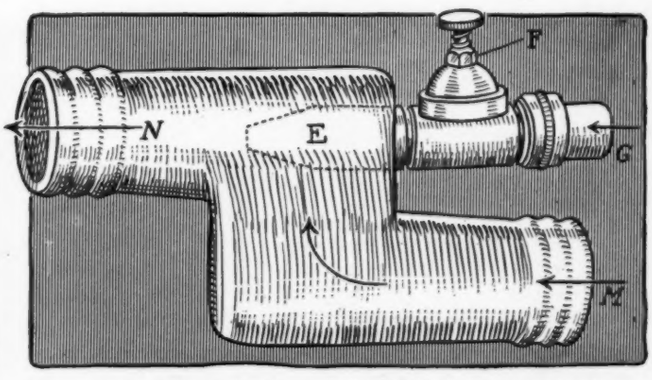

Fig. 2—Details of injector operated by exhaust gases

THE AUTOMOBILE

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Uniform Traffic Regulations

THERE are in the United States approximately 200 cities with populations ranging from 25,000 to 200,000 inclusive. Of these cities fully 15 per cent. are trying to evolve some form of traffic control to meet local conditions. They all realize that an understood code of traffic regulation is imperative. They recognize that with mixed traffic, automobile and horse, an improvement in traffic laws is needed as compared with the days when the horse was alone in the field. The higher speed of the automobile, its wide use after sunset, its quietness of operation, etc., all compel rational regulation.

In cities of over 200,000 population there is a marked uniformity of traffic regulation at present. It has been evolved largely within the last 4 or 5 years. The policeman's whistle at crossings, the raised hand of the driver to indicate stopping or turning on the street, are understood by all; but in the smaller cities such regulations are not enforced as they should be, with the result that when citizens from smaller cities visit the metropolitan centers they are more or less ignorant of the elements of driver's signals and police control and not infrequently accidents happen.

It is to avoid accidents and make speed possible that traffic control has been developed. It is as necessary in the small city as in the metropolitan center; they differ but in the degree. The automobile owner in a city of 25,000 population will without doubt drive through many cities of over 50,000 during the season and if he is not familiar with traffic control he will run amuck, if not with other automobilists, then with the police authorities. For the same reason that uniform road signals to give warning of steep hills, bad turns, dangerous bridges, etc., are necessary for the safe use of the road by the automobilists, so uniform traffic regulations are essential.

The same detail of control that is needed in New York and Chicago, and in Boston and Philadelphia, is not needed in smaller cities, but policemen and driver signals are necessary. In every city of over 25,000 population it is essential that horse and automobile drivers should be educated to and compelled to raise the hand when stopping suddenly, when turning left across a street, or when doing several of the other common driving essentials. It should be a law in these cities that the horse or motor vehicle must stop with the right side of the machine to the curb. This rule should be adhered to for educational purposes. The driver should "get the habit" of stopping this way and not stopping in any other way. Serious accidents have been caused by violations of this rule and the only safe way of insuring the rule is to make it compulsory in all cities of over 25,000 population.

Uniform traffic regulations are a protection to the car driver. Whether he lives in Los Angeles or Atlanta, Ga., he should welcome and work for such regulations. The experienced driver in particular should work for such. He knows perfectly what he himself will do, but the danger factor is in what the other driver will do. The novice, the inexperienced operator, is the dangerous one; he it is who violates rules, pays little if any heed to traffic regulations and generally acts as a menace to other users of the highways.

THE AUTOMOBILE suggests that chiefs of police in different cities take up the matter of a standard code of traffic regulations for motor and horse vehicles. The suggestion is further made that automobile clubs and trade organizations assist in this work. It is a necessary one, and when such is accomplished there will be a material benefit to the automobile owner because of tht greater feeling of safety he will have and also because of the reduced insurance rates on his machine, made possible by the reduction of accidents which are largely due at present to poor traffic regulations and failure to get the drivers "in the habit" of doing the right thing at all times.

Uniform traffic regulations call for uniform lights on both motor and horse vehicles. Horse vehicles must be compelled to carry lights after sunset. Each year has its quota of fatal accidents due to collision with horse vehicles because of their not carrying lights. The motor vehicle is becoming so prevalent to-day that there is not a city in the land in which the light regulation should not be effective. The requirement of horse vehicles carrying lights is more necessary because of the regulations against the use of headlights on automobiles. Where the motorist is forbidden the use of the headlight and the horse vehicle is not compelled to carry a headlight and also a rear light a dangerous condition exists. There is still another reason for the carrying of lights on horse vehicles, namely, the increased use of motor trucks. These vehicles, because of the varied nature of their work, are compelled to use every city street; their work often extends into the night, and where horse vehicles without lights are on the street at the same time it is dangerous to everyone concerned.

Little Rhody's New Tag

Old One Was Confusing When It Became Necessary to Take a Quick Eye-Shot at a Speedy Car

PROVIDENCE, R. I., May 11—At a meeting of the Board of Public Roads of Rhode Island the board acting under the new law recently passed has decided that all motorists in the state must take out new license plates within 3 months. The board has ordered that the new plates shall be of white with the letters and numerals of black. Instead of the letters R I being at the end of the plate following the numbers they will be at the left side preceding the figures. The R will be above the I instead of preceding it as on the old plates. Manufacturers will have plates with an X to denote that they are not private cars. The new plates will be 12 inches long by 4 1-2 inches high instead of 14 by 5 1-2, as were the old plates. The new numbers will be not less than 3 inches high and as wide as possible to make them easily distinguishable. The motorists who now hold registrations will be given the new plates free in exchange for their old ones. This change in plates was brought about by complaints from the police departments in Rhode Island, whose officials stated to the board that when cars were running very fast the letters R I very often seemed to be merged into 81 and this made it difficult to pick out a number for prosecution. Persons now registering new cars are receiving the new plates, while other motorists have plenty time to make the change. The board expects that all the cars with old numbers will make a change speedily as in doing so the owners may receive the same numbers they now hold, some of them having the same ones since the state first began registering motor cars.

Rural and Star Route Mileage

WASHINGTON, D. C., May 13—Representative Joseph C. Cannon, of Illinois, in the course of a speech in the House in connection with the proposition that the Federal government aid the various states in providing good roads through appropriations toward the upkeep of the rural and star routes, submitted some interesting figures as to the daily and annual travel on both the rural and the star routes, as shown by miles. His figures show that the daily travel on rural routes amounts to 1,010,398 miles; the annual travel, 310,191,572 miles. The daily travel on star routes, 318,280 miles; the annual travel, 84,678,423 miles. The total length of the rural routes is 1,018,909 miles; the total length of the star routes, 160,058 miles.

Mr. Cannon showed that the cost, under the bill, to the Federal government for the first year would be $2,300,000.

Says Motor Fire Wagon Is Too Fast

DUNKIRK, N. Y., May 14—The fire and police commissioners of this city are so enthusiastic over the test recently given the new motor fire-engine, purchased from the American-La France Motor Fire Engine Company, of Elmira, N. Y., that they are proposing a plan whereby the hook-and-ladder wagon truck will be pulled by a motor engine, thus doing away with the horses in the local fire department. An official protest has been filed with the commissioners by the members of the Pioneer Hook & Ladder Company, the firemen declaring that the speed of the motor engine is too great for the attachment of an original horse-drawn truck as lives of local residents would be greatly in danger, but the proposition of the commissioners, it is said, will be declared satisfactory by the city council, which meets next week, because it will mean the saving of money. The citizens themselves are heartily in favor of the new method.

State Law Still in Air

Massachusetts' Solons May Postpone Final Action Until Summer Recess Committee Considers Matter

BOSTON, MASS., May 11—It looks now as if the proposed motor legislation with which the committee on roads and bridges of the Massachusetts Legislature has been wrestling since the session opened may be turned over to a recess committee for consideration. As a result of the criticism aroused over the increase in truck fees and the weight and speed limits on trucks, which resulted in the bills being recommitted to the committees twice after they were reported to the house, the subcommittee now in charge of the bills does not know which way to turn. Chairman Eldredge, of the Senate committee, has had a conference with the speaker of the House and the president of the Senate on the proposition to appoint a recess committee to consider the matter. This means that perhaps some of the present members of the committee will have a chance to earn a little money this summer going over motor legislation.

The bill that would make it mandatory to use only horns that would make an abrupt sound finally lost out in the House by a vote of 60 to 58 after it had succeeded in getting a third reading.

Hope to Increase Export Trade

The initial convention of the Pan-American Trade Association will be held the latter part of this week at the Waldorf when the commercial relations existing between the United States and the republics of South and Central America will be exhaustively outlined.

The theme of the discussion will be how to increase trade between this country and the other American nations. Automobile and accessory trade will come in for considerable consideration. Among the speakers selected for the occasion are: Pedro R. Rincones, consul-general Venezuela; Alfredo Metz Green, consul-general Uruguay; Francisco Escobar, consul-general Colombia; Manuel Gonzales, consul-general Costa Rica, and J. P. Santamarina, trade expert Argentina.

Show to Sell Second-Hand Cars

BOSTON, May 13—A motor car show for used cars exclusively is the newest plan in Boston to get rid of cars with which the local dealers are stocked up. At least that is the scheme evolved by O. D. Corbett, who has conducted motor shows in some of the New England cities. Mr. Corbett came to Boston last week and immediately leased the Arena, the biggest show building in the city with the exception of Mechanics' Building, where the annual motor shows are held. He has taken it for a week, beginning June 5, and then he sent out circulars to the local dealers notifying them about his plan. In his letter he announces that space will not be allotted to new cars, but only to the used cars, or ones taken in trade. Cars sold during the day may be removed at night and others put in. Under Mr. Corbett's plan space is to be sold at the rate of $100 for a booth sufficient to accommodate two cars without crowding. Admission is to be 25 cents and admissions supplied to exhibitors will be given out at half price. When the show closes a rebate of 50 per cent. of the paid admissions will be divided *pro rata* among the exhibitors.

Many of the dealers have a lot of second-hand cars on hand, but just what attitude they will take to the proposed show is problematical. It is a question if many of the local dealers who are members of the Boston Automobile Dealers Association will go into it. Mr. Corbett announces that he will not sell space to the men who deal exclusively in second-hand cars.

Joint Road Commission

Senator Gore, of Oklahoma, Introduces Bill Authorizing Such Body to Investigate Conditions

WASHINGTON, D. C., May 13—Senator Gore, of Oklahoma, has introduced in the Senate a joint resolution in the form of a proposed amendment to H. R. 21,279, the post-office appropriation bill, which provides for a joint commission on public highways, to consist of two members of the Senate and two members of the House of Representatives and four other members to be designated, respectively, by the Secretary of Agriculture, the Secretary of War, the Postmaster-General, and the Interstate Commerce Commission, the four members last provided for, if not already in the employ of the government, to receive compensation at a rate not to exceed the salary of a member of Congress. The said commission is authorized and directed to investigate and report to the present Congress the condition of public highways in the several states of the Union and, so far as data may be available, in the leading commercial centers of Europe.

Other information to be compiled, Senator Gore provides in his bill, is as follows: The cost of instruction, improvement and maintenance of public highways in the several states of the Union and in the leading countries of Europe; a digest of the laws in those states and foreign countries which have made most progress in the establishment and maintenance of an improved system of public highways; the cost of transportation and the difference in the cost of transportation over improved and unimproved highways; the expenditures on public highways annually made by the several states, as states, by the counties in the several states, and by the townships and other civil subdivisions so far as practicable; to report as to the advisability to co-operation between the federal and the state governments in the construction and maintenance of highways necessary to the postal and military services of the United States government and to interstate commerce, and to recommend such legislation as may be deemed necessary and proper, if any; that said commission shall organize by the election of a chairman, and shall have power to employ a clerk and other assistants and to do all other acts and things which may be necessary and proper to carry out the provisions of this act; and the sum of $35,000, or so much thereof as may be necessary, is hereby appropriated, out of any money in the treasury not otherwise appropriated, to pay the necessary expenses of said joint commission, the sum to be disbursed by the clerk of the House upon vouchers to be approved by the chairman of the commission.

Milwaukee County Improving Roads

MILWAUKEE, WIS., May 13—The county board of Milwaukee has purchased the first instalment of road machinery required for the extensive highway construction and improvement scheme now under way. The first order includes one 10-ton tractor; a concrete mixer, four road scrapers, one grader, two plows, a dozen King drags and several wagons. Approximately $10,000 will be spent in tools and machinery. H. J. Kuelling, county highway commissioner, has set crews at work on several stretches which will be permanently improved. The most elaborate project, improving 6 miles of the Janesville plank road by making it a 150-foot boulevard, with two 30-foot roadways and a parkway, will probably come to naught, as the new county board is opposed to the Socialist notion of building boulevards in the country districts and wishes to make the plank road but 60 feet wide. The width of the roadway proper has not been determined. The plank road is the most traveled highway in the county, from 1,200 to 2,700 teams passing over it daily.

Glacier Park Is Open

Regulations Just Issued for the Operation of Automobiles in Nation's Newest Playground

BELTON, MONT., May 13—Regulations governing the use of automobiles in Glacier Park, the nation's newest playground, and which have just been promulgated by the Secretary of the Interior, are as follows:

Pursuant to authority conferred by the Act of May 11, 1910, setting aside certain lands in the State of Montana as a public park, the following regulations governing the admission of automobiles into the Glacier National Park are hereby established and made public:

No automobiles will be permitted within the metes and bounds of the Glacier National Park unless the owner thereof secures a written permit from the superintendent or his representative.

Applications for permits must show: (a) name of owner, (b) number of machine, (c) name of driver, and (d) inclusive dates for which permit is desired, not exceeding one year, and be accompanied by a fee of $1 for a single round trip through the park, or a fee of $5 for each machine per annum.

Permits must be presented to the superintendent or his authorized representatives at the park entrance on the government road. The permittee will not be allowed to do a transportation business in the park without a special license therefor from the Secretary of the Interior.

The use of automobiles will be permitted on the government road from Belton, Mont., to the administrative headquarters at Lake McDonald between the hours of 7 A. M. and 8:30 P. M.

Automobiles will stop when teams, saddle horses, or pack trains approach, and remain at rest until they have passed or until the drivers are satisfied regarding the safety of their horses.

Speed will be limited to 6 miles per hour, except on straight stretches where approaching teams, saddle horses and pack trains will be visible, when, if none in sight, this speed may be increased to the rate indicated on signboards along the road; in no event, however, shall it exceed 15 miles per hour.

Signal with horn will be given at or near every bend to announce to approaching drivers the proximity of a machine.

Horses have the right of way and automobiles will be backed or otherwise handled, as necessary so as to enable horses to pass with safety.

All permits granted at any time when automobiles can enter the park will expire on December 31 of the year of issue.

Violation of any of the foregoing rules, or the general regulations for the government of the park, will cause the revocation of permit; will subject the owner of the automobiles to any damages occasioned thereby and to ejectment from the reservation, and be cause for refusal to issue a new permit to the owner without prior sanction in writing from the Secretary of the Interior.

Six States in Good Roads Meet

LOGAN, UTAH., May 13—Preparations for accommodating and entertaining the delegates to the fourth annual Intermountain Good Roads Convention, to be held in this city on June 12, 13 and 14, are now going on full blast. This convention promises to be the largest one of the kind ever held in the Rocky Mountain district. Delegates from six states holding membership in the organization will be on hand. These states are Colorado, Wyoming, Montana, Idaho, Nevada and Utah. Although this city is well equipped with hotels, arrangements have been completed with D. E. Burley, general passenger agent of the Oregon Short Line, to fill the sidetracks with sleeping cars to accommodate delegates.

Secretary William Wallen, of Pocatello, Idaho, says that one of the main objects of the convention will be an effort to secure government aid in the construction of highways through this mountainous country. Interstate highways, made necessary by increasing automobile travel, form another featured movement.

To Entertain Good Roads Congress

NEW ORLEANS, LA., May 14—One hundred automobile owners have been chosen to act as the reception committee during the National Good Roads Congress, which convenes here Thursday. Tours over the shell road system in the vicinity of this city have been arranged and each one of the 2,500 delegates expected may make the trip if he so desires. The motor car trips also provide visits to the French quarters, Spanish Fort, the Cabildo and other points of interest in the city. Special excursion boats will ply between the city and the Chalmette battlefield. Owners of motor boats on Lake Pontchartrain have placed their craft at the disposition of the entertainment committee.

Crawford Notch State's

New Hampshire Takes the First Step Toward Buying This Famous American Beauty Spot

CONCORD, N. H., May 11—Crawford Notch, the gateway to the White Mountains in New Hampshire, and one of the famous beauty spots in America, is to become the property of the state as a result of a decision handed down by the Supreme Court a few days ago. The state has been trying to secure possession of this stretch of property for some time and Governor Robert P. Bass and his council have been trying to purchase it. Some of the big timber owners in the stretch known as Hart's Location have been fighting the plan and they refused to set any price upon their property, meanwhile cutting away the timber. Governor Bass and his council made an appeal to the Supreme Court to appoint a commission to go over the property and assess damages upon it and the court has granted the request. The state will now begin its surveys and the commission will make the award so that the property will be saved for all time to the people. Crawford Notch is used by thousands of motorists every year going to and returning, from the White Mountains.

Atlanta to Boost Near-By Roads

ATLANTA, GA., May 10—With the slogan "Know your own county," and with a civil engineer working now on a road map, Fulton County, in which Atlanta is located, is planning a "round-the-county" tour. It is the scheme to make this a 1-day run, about 150 miles in length, to cover all or at least a material part of every good paved road in the county. It is the belief of the county commissioners that few of the motorists know even half of the good roads in Fulton County, and with this belief in mind they have started work on mapping out a 150-mile route in Fulton County that will be suitable for a 1-day run.

A Velie car has been chosen as the pathfinder for this tour and the route will be carefully mapped and published in book-form. It is likely that July 4 will be selected as the date of the "See Fulton First" event.

Inspect the Arcadia Highway

ST. LOUIS, MO., May 11—An inspection trip of the Arcadia Highway was made last week by a party of tourists in an American Tourist car. Those in the party included John H. Curran, former immigration commissioner of Missouri; James E. Foland, who first logged the route 2 years ago, and C. W. Waughop, of the American Motor Sales Company.

They found the road in ripe condition for the dedication, May 23. A year ago parts of the road were well-nigh impassable. These parts have been worked and covered with gravel until now they are nearly perfect for touring.

The road passes through many interesting spots, including Fort Davidson, where General Price had his Confederate troops during the early part of the Civil War; Graniteville and Iron Mountain, the city that gave the railroad its name.

The highway is 104 miles long and makes an ideal day tour for St. Louisans.

HAVANA, CUBA, May 9—"Asociación de Buenos Caminos" is the official name of the good roads organization in Cuba. This association, which was formed recently, is composed largely of motor car owners. The object of the organization is to increase the good roads mileage and to prepare and publish maps showing the routes available for automobile tours on the island.

Maine After the Tourist

Will Start at Once to Improve Roads in Order to Attract Touring and Holidaying Automobilists

PORTLAND, ME., May 11—Work will be started immediately to improve the state highways in an effort to induce motorists visiting New England not to sidetrack Maine in their journeys, as they have in the past because the roads leading to the state from the New Hampshire line have been among the poorest stretches in New England.

Governor Plaisted has recommended to his council that the road between Bridgeton and Fryeburg be put in shape immediately, the amount required being between $10,000 and $15,000, a portion of which will be paid by the two towns under the new law. This will mean that the important artery of travel leading to and from the White Mountains in New Hampshire will be improved immediately. New Hampshire has its share of the road in fine shape, and when the Maine portion is finished it will mean a fine road from Bretton Woods to Portland by way of Poland Springs.

The other important link, and the one of greater importance to the state, is that leading from the New Hampshire line through to Portland. This has long been notorious as a bad stretch. Highway Commissioner Hardison stated that surveys were now completed for building 7,000 feet of road between Biddeford and Kennebunk. This will take care of the worst section of the strip that leads through the Kennebunk woods. Commissioner Hardison also announced that surveys were completed and bids were asked for the construction of 14,000 feet leading through Wells. Added to this between 2 and 3 miles in the town of York will be constructed, while the road leading through Kittery will be resurfaced and the Ogunquitt-Cape Neddick stretch will be entirely rebuilt, too. Biddeford and Saco will construct some roads in their territory. York has already voted $12,000 for the highways in that town, and with all the officials working together it is expected that by July 1 the entire stretch to Portsmouth, N. H., will be in first-class condition for motor travel. It has not been definitely settled yet whether any more permanent work on the main state highway betwen Portland and Saco will be carried out this year. However, with what has been planned now it means that motorists will not fear visiting the famous coast resorts of Maine in future.

Governor Plaisted expressed himself as being heartily in favor of a patrol system for the roads whereby a certain number of miles be allotted to a caretaker, who would make daily trips over the stretch and note its condition and make reports so that breaks could be easily repaired before they become extensive.

Milwaukee Gets Road Congress

MILWAUKEE, WIS., May 13—The first American Road Congress, in which four great organizations which have heretofore met and worked separately, will conjoin, is practically located at Milwaukee. Charles Q. Light, of Washington, D. C., spent several days in Milwaukee last week to look over the ground and received a highly favorable impression. The Milwaukee Automobile Club is co-operating with the Citizens' Business League, the Milwaukee convention bureau, in locating the convention at Milwaukee. The four bodies which will join in the congress are the American Automobile Association, American Highway Improvement Association, American Road Builders' Association and American Road Machinery Association. Dates have not been decided. The Milwaukee Auditorium has been placed at the disposal of the congress for its sessions and for an exposition of machinery and tools.

Trade Outlook Bright Despite Bad Weather

Crop Reports from Northwest, South and Southwest Augur Well for the Automobile Business

Conditions in Texas Better Than Usual—Copious Rains Have Proven Beneficial

MINNEAPOLIS, MINN., May 13.—Crop and financial conditions in the Northwest are covered in the monthly review by the Northwestern National Bank. Among other observations, the review says: "In the Northwest there is a general feeling that this year will be a prosperous one, for all indications at present point toward a good yield of all the important products of this great agricultural district. An abundance of rain last fall, a rather late spring with plenty of moisture, and no set-backs, occasioned by chilling frosts, is the consensus of reports received from all directions, and an optimistic spirit is evident everywhere, as brought out by the interviews with well-informed bankers and business men from all parts of the Northwest. We see, so far, no occasion to change the opinion expressed in our December number that this will be a quiet but satisfactory year in business."

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AUSTIN, TEX., May 13—Viewed from the standpoint of unusually favorable prospects for all kinds of crops the motor car trade situation all over Texas could hardly be brighter. Not for many years has the outlook for bumper harvests been more propitious at this season of the year than now. From every section of the agricultural portions of the state come glowing reports of the condition of different growing crops. In the Panhandle and North Texas territory wheat is looking fine and a total yield of approximately 18,000,000 bushels for the state is promised. This will be about six million bushels more than was raised last year. The total oats production will be upward of 50,000,000 bushels, it is estimated. Excessive rains in the planting season set back corn somewhat, but on the whole it promises a good yield. Cotton could hardly give better promise of a big yield and it is predicted by men who are familiar with the situation that the yield of that staple this year is likely to be in excess of 4,000,000 bales. The East Texas peach crop will be one of the largest for several years. The same is true of the tomato crop, which is an important factor in the prosperity of the people of a large section of the state. The truck growers of South Texas, particularly the cabbage, Bermuda onion and Irish potato farmers, are receiving unusually large returns for their crops. In the rice growing belt conditions are also good. Oil, livestock and other interests are prosperous.

That this highly desirable condition is realized and appreciated by the motor car dealers in all parts of the state is shown by the preparations that most of them are making for doing a big business when the money comes in from the harvests of the crops.

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PORTLAND, ORE., May 11.—By far the greatest crop of wheat ever produced in the three states of the Pacific Northwest is likely this season. A preliminary estimate of the crop, with its increased acreage, would give close to 80,000,000 bushels as the totals of Oregon, Idaho and Washington during 1912.

The best the three states have hitherto produced did not reach much, if any, above 64,000,000. This record was shown during last season.

The total acreage planted to wheat in Oregon, Idaho and Washington this season amounts to 3,807,000 acres, compared with 3,631,000 acres in 1911. Of the totals of this year, the spring sowing amounts to 1,831,000 acres, while the fall winter planting is 2,076,000 acres.

Of the increased showing in acreage, practically all of the improvement has been made in Oregon. In fact, some losses are indicated by the returns from Washington and Idaho.

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SALT LAKE CITY, May 13.—In spite of a backward spring where weather conditions have been greatly adverse to the sale of automobiles, it is confidently expected that 1912 will be a banner year in the automobile business in the Intermountain West. Rain and snow have held back the sale of many a car, but despite this fact more machines have been sold in the first 4 months of the year than ever before in the history of the automobile business.

The most prominent feature in this year's business is the number of sales going to the country and the smaller towns. This is true of Idaho, Western Wyoming and Eastern Nevada, which states buy cars through Salt Lake jobbers and dealers. Heretofore Salt Lake has consumed three out of every four cars sold in this territory, but this year these figures will be reversed. The intermountain farmer has been slow to accept the automobile, but 1912 shows him as eager to get into line as the farmers of the Mississippi valley were a couple of years ago.

This year sees more agencies located in Salt Lake than ever before and the dealers are now branching out for the country trade which in the past has been considered as not worth going after. The sales of the higher-priced cars keep abreast of the demand for the cheaper ones.

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S. A. E. Moves to New Home

Headquarters of the Society of Automobile Engineers has been moved from Broadway and Forty-first street to the new United States Tire Company's building on Broadway near Columbus Circle. The society has occupied a commodious suite on the twelfth floor.

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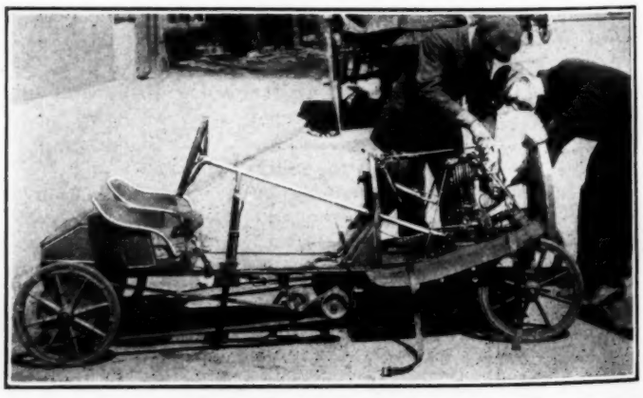
Quaker City Boys' Novel Car

Two Philadelphia boys have combined a motorcycle engine with a pushmobile wagon and are the observed of all observers when they travel around in their novel automobile. They challenge any one with a similar machine (if there is one in existence) to a test run to Atlantic City for speed and endurance. The picture shows the little machine in detail. The owners claim a speed of 18 miles an hour without much effort on the part of the little motor and are going to try it out to test the full speed when other tests have proved satisfactory. The machine is started with a push.



Car made by two Philadelphia boys—it can go some, too

Rivett Special, made by a Scriba Corners blacksmith

Unique Home-Made Automobile

SYRACUSE, N. Y., April 27—A queer exhibit at the recent Oswego automobile show was by a blacksmith, Claude Rivett, from Scriba Corners. It was an automobile he had constructed himself from odds and ends, and he called it the Rivett Special. It resembles a large wheelbarrow, having two wheels in front and one behind. It was put together with a hammer, a monkey-wrench, a screw-driver and a saw—and it looks it. It has two speeds forward but no reverse, the batteries are in an old coverless box under the seat and the flywheel is exposed, projecting through the floor of the car. The two-cylinder engine not occupying all the space under the hood, the maker stores a tin pail, funnel and other articles under there. The motor is water-cooled, coils of pipe showing through the chicken wire stretched over the hood. There is a chain drive, the chain being big enough for a truck. An old packing box furnishes the body and there is no paint or cushions. The two front wheels have iron rims and the rear wheel the remnants of a rubber tire. The thing actually runs and at a speed of 15 miles an hour. You can hear it coming. Its owner values it at $75.

To Entertain Gotham's Orphans

June 4 and 5 will be red-letter days for the orphans of New York, for on those two dates the annual automobile outings for their benefit will take place. On the first date the Long Island Automobile Club will give its outing and it is estimated that 350 cars will be required to carry all the children.

On June 5 the eighth annual outing of the Orphans' Automobile Day Association of New York will be held. This organization was started by Colonel K. C. Pardee of the United States Motor Company and includes representatives of almost every prominent automobile company in New York. Mrs. J. D. Smith is president. Last year the association transported and entertained 4,300 orphans.

Muffler Law for Quaker City

PHILADELPHIA, May 10—There is an ordinance pending consideration in City Councils transmitted by Mayor Blankenburg upon recommendation of Director of Public Safety Porter to regulate the operation of motor vehicles within the city limits. The ordinance aims to stop obnoxious odors and to compel the adoption of mufflers, the latter to be in constant use, to permit exhaust gases from the engine to escape into the air. Many complaints have been registered of the excessive volumes of smoke emitted by an increasing number of cars.

Late Details of Everitt-Metzger-Flanders Deal

Walter E. Flanders May Run Into a Lawsuit as One of the Results of the Reunion

Everitt Six Will Be Built at Present Plant, the Four at the Pontiac Factory

DETROIT, MICH., May 13—The prospective Everitt-Metzger-Flanders reunion, the first definite announcement of which was made in last week's issue of THE AUTOMOBILE, is about the only topic of discussion in local automobile circles just now. Taking their tip from the trade papers, the Detroit dailies at once got busy on the story and are now printing columns about the merger and its possible results. They are handling the matter gingerly, however, and are not committing themselves definitely as to just what will happen.

Walter E. Flanders, who is soon to leave the Studebaker Corporation to join hands with his old partners, when questioned about a report that he is under a contract with the Studebaker Corporation that still has 3 years to run, and that his leaving might result in a lawsuit, said:

"That is quite possible. I believe I am not under contract. I have been given very little to do around the Studebaker plants lately. They claim the right to use my name in the event of my quitting the company. I do not believe they have that right, and this difference of opinion may result in some entanglements."

One of the reports that have gone out is to the effect that Mr. Flanders has purchased or will purchase the interests of Messrs. Everitt and Metzger in the Metzger Motor Car Company. This is stoutly denied by William E. Metzger, who says that neither he nor Mr. Everitt will dispose of his interests.

"It is true," said Mr. Metzger, "that there will be additional capital to a large amount brought into our company, which will be used to extend the business. The present plant is now undergoing alterations that will almost double its capacity, and another plant will be built here in Detroit.

It is understood that the present plant will be used for the manufacture of the Everitt Six models, while the four-cylinder cars will be manufactured at the plant of the Flanders Manufacturing Company in Pontiac, where in the past this company has manufactured gears, forgings and castings and carried on 50 per cent. of the screw machine work for the Studebaker Corporation.

There have been rumors that the Metzger Company would take over the present factory of the Universal Motor Truck Company and that the latter would be removed to the Allis-Chalmers plant in Milwaukee, but there has been no confirmation of this.

The Studebaker Corporation has picked Ernest H. Benson as sales manager of its automobile division to succeed Paul Smith. Mr. Benson has been sales manager for the Cadillac Motor Car Company for the past 5 years and his place there has been filled by the promotion of E. C. Howard from the position of assistant sales manager.

English Motor Journalist Here

Lord Montagu, editor and publisher of *The Car*, one of the noted British motor publications, is due to arrive in New York this week for a tour of inspection covering the American automobile industry. He will make quite a complete circuit of the typical American plants and will investigate all the conditions that surround making, selling and using cars in this country.

Great Western 40, official pathfinder of the Four-States-Tour, being escorted out of Indianapolis by Governor Marshall

FOUR-STATES-TOUR Pathfinder on Way—The pathfinder for the Four-States-Tour, which was sent off from Indianapolis, Ind., on April 25 by Governor Marshall, of Indiana, Mayor Shank, of Indianapolis, and a number of representatives of the automobile industry, has encountered rain and mud almost continually since leaving Indianapolis, but is making excellent progress, considering conditions. The car is a Great Western 40, driven by Clarence LaMar.

Jackson Enlarges Minneapolis Quarters—The Jackson Motor Company, representing the Jackson car, now has 14,000 square feet of floor-space at 1528 Hennepin avenue, Minneapolis, Minn.

Washington Service Branch—The Overland-Washington Motor Company, Washington, D. C., has opened a service department at 222 Fourteenth street for Overland, Garford and Gramm pleasure cars and trucks.

Repair Shop in San José—Wickland & Britton are erecting a modern building in San José, Cal., for the purpose of engaging in machine shop practice, automobile repairing and the manufacture of pneumatic jacks for automobile use.

Zekman Automobile Company Moves—The Zekman Auto Company, Milwaukee, Wis., has removed from 917 Hennepin avenue to 1631 Hennepin avenue, adjoining the Fawkes Automobile Company and the Oldsmobile branch.

Motz Opens Cleveland Branch—The Motz Tire & Rubber Company announce the opening of a branch office at 2352 Euclid avenue, Cleveland, O., to take care of their rapidly growing business in this city. C. R. Serfoss will be in charge.

Globe Foreign Bearings Representative—The Globe Ball Bearing Company, of 50 Church street, New York City, has secured the American agency of the Societé de Mécanique de Précision, of Clichy, France, manufacturers of Duplex bearings.

Jackson Cleveland Goodyear Manager—The Cleveland and Toledo branches of the Goodyear Tire & Rubber Company, Akron, O., will in future come under the jurisdiction of E. F. Jackson, manager of the Detroit district. C. W. Holcker has been appointed local manager of the Detroit branch.

Grossman Offers Prizes—The Emil Grossman Company, of New York City, will award a prize of $1,000 to the winner of the 500-mile race at Indianapolis on May 30 if Red-Head spark-plugs are used: $250 to the driver finishing second, if Red-Head spark-plugs are used, and $100 to the driver finishing third, if Red-Head spark-plugs are used.

Wheel Spring Company Organized—The Bernston Spring Wheel Company has been organized in Washington, D. C., for the purpose of manufacturing the Bernston resilient steel wheel for automobiles. The Bernston wheel resilient spokes are so constructed as to serve as cushioning means for the wheels. William S. Gude is president of the company.

Buy 107 Automobiles Daily—According to statistics, Californians have the motor habit. The registrations at Secretary of State Jordan's office show that Californians have purchased, on an average, 107 automobiles per day during the past month. During April 2,803 cars were sold in the state. The fees for the registration of the machines amounted to more than $6,000.

Largest Registration in Wisconsin—The Wisconsin automobile registration on May 10 was 17,250. It was expected that the registration under the new annual registration law would reach 23,000 immediately after January 1, when all cars must be re-registered. However, applications for licenses are coming in at the rate of 175 per day and that figure will be reached soon. The total income to the state on licenses to May 10 was $86,250.

Reciprocity Dinner a Success—Reciprocity's victory in New Jersey was celebrated at a banquet held recently at the Washington, Newark, N. J. The event was under the auspices of the Committee of Fifteen, which worked so enegetically for the enactment of the law at the recent session of the legislature. President Hooper, of the A. A. A., and Louis Block, president of the Philadelphia Trade Association, were among the speakers.

Large Fire in Detroit—A fire recently caused $4,000 damage to the United States Auto Supply Company, 372 Michigan avenue, Detroit, Mich.

Youman's New Showrooms—J. S. Youman, representing the Mitchell car, is now established in his new showrooms on West Genesee street, Syracuse, N. Y.

Opens Supply Branch in Newark—The National Auto Supply Company, with headquarters at 77 Chambers street, New York City, has opened a branch store in Newark, N. J.

Thousands of Tires Burned—There was a large fire in a rubber establishment in Providence, R. I., recently. Thousands of tires were burned, the loss being estimated at $550,000.

Equipment Company Opens Store—The Pittsburgh Auto Equipment Company has opened a new store in the Petroleum Products building on the Grant boulevard, Pittsburgh, Pa.

York Club Buys Mansion—The York Motor Club will have one of the finest and best-equipped clubhouses in southern Pennsylvania. The deal for the purchase of the John Laing mansion has been closed.

Jordan Joins Century Company—John Jordan has resigned from the Diamond Rubber Company, of New York, to accept the position of treasurer and assistant sales manager for the Century Tire Company.

Partnership Is Dissolved—The partnership of Myron R. Churchill and Harold E. Scott, doing business as the United Car Sales Company, Marinette, Wis., has been disolved. Mr. Churchill will continue the business.

Portland Rose Festival Parade—A number of entries have already been made for the annual Rose Festival automobile parade to be held the first part of June in Portland, Ore. Handsome trophies and prizes will be given to the best decorated cars.

Wright Now District Manager—Edward E. Wright has been appointed manager of the central sales district of the McKeen Motor Car Company, Omaha, Neb., with headquarters in the Marquette building, Chicago, Ill. The central district includes twelve states.

McDonald Is a Sales Manager—John McDonald, chief purchasing agent of Gimbel Brothers', Milwaukee, Wis., department store, has resigned to become sales manager of the Kopmeier Motor Car Company, representing the Fiat, Chalmers and Detroit electric.

Andrew Redmond Buys Site—Andrew Redmond, Harrisburg, Pa., has purchased a plot of ground with a frontage of 145 feet on Third street, between Dauphin and Muench street, from Dr. R. H. Moffitt. He will erect a building and conduct an extensive automobile business.

Pawtucket Automobile Company Bought—Jerry L. Wightman has taken over the Broadway Automobile Company, Pawtucket, R. I., and has placed his son, Elmer C. Wightman, in charge as manager. The company has the agency for the Premier car in Pawtucket and in Attleboro, Mass.

Mellett Appointed Advertising Manager—The Buick Motor Company, Indianapolis, Ind., has appointed R. L. Mellett advertising manager. Mellett was formerly in newspaper work, but more recently has been with the advertising department of the Premier Motor Manufacturing Company.

Hinkley Chalmers' Chief Engineer—C. C. Hinkley has been appointed chief engineer for the Chalmers Motor Company, Detroit, Mich., and assumed his new duties May 1. Mr. Hinkley was formerly an associate of George W. Dunham, vice-president and consulting engineer of the Chalmers company.

'Bus Successful in Atlanta—An automobile 'bus is doing successful work as an accessory to the street car line in Atlanta, Ga. It runs from the end of the Buckhead line out Pace's Ferru road as far as Glenwoods. The money for it was raised by subscription among the wealthy residents in that section of the city.

Milwaukee Mitchell to Build—The Mitchell Automobile Company, Milwaukee, Wis., branch of the Mitchell-Lewis Motor Company, Racine, Wis., is about to award contracts for the construction of a large service building at 528-532 Broadway, using the present building as a nucleus. It will be ready about August 15.

Indianapolis Show Profitable—The Indianapolis Automobile Trade Association has returned 50 per cent. of the amount paid for rental space to exhibitors in the automobile show held in a tent in March. In addition, the association has set aside $1,000 toward the erection of a coliseum, provided a contract for the building is let by April 1, 1913.

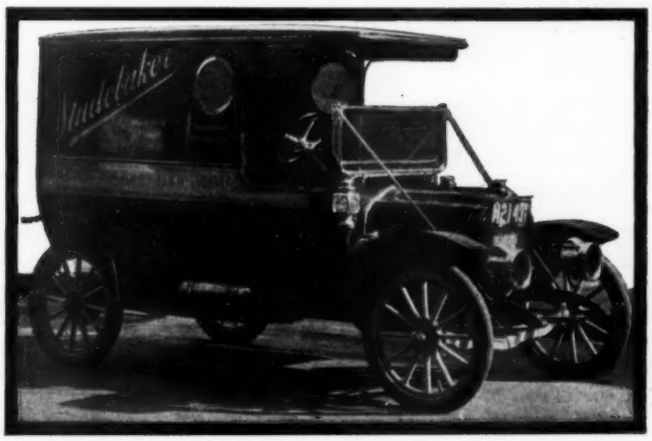
Faye Resigns from Matheson—Roy A. Faye, New England sales manager for the Matheson, has resigned to become interested in the C. R. G. Manufacturing Company, maker of C. R. G. carbureters. This company was recently formed by Mr. Faye. R. G. Nelson, resident manager of the New England Matheson branch, has assumed the duties of sales manager.

Locomobile Opens Service Station—The Locomobile Company, Bridgeport, Conn., has opened a factory branch and service station in Los Angeles, Cal., for the convenience of customers in southern California and the Southwest. Until proper quarters can be erected, this branch will be located at 942 South Grand Avenue, Los Angeles. J. Murray Page is manager.

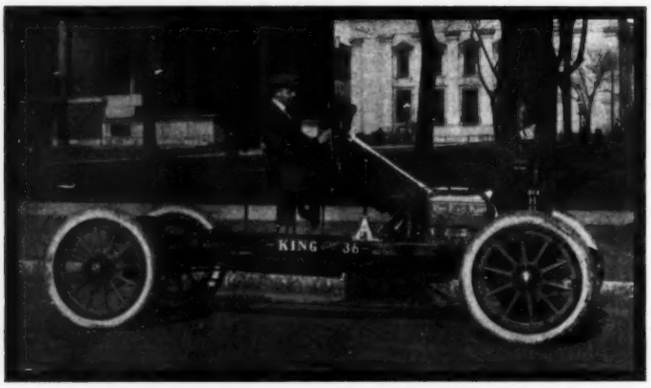
Hoosier Dealers to Organize—Indiana automobile dealers are preparing to organize an association for their mutual benefit. A meeting for organizing such an association has been called and will be held at the Claypool Hotel, in Indianapolis, on May 17. W. S. Gilbreath, secretary of the Hoosier Motor Club, and Dale Ogden, of Columbus, O., are arranging the meeting.

International Company in Washington—The International Motor Company has opened a branch at 811 Seventeenth street, N. W., Washington, D. C., with a service department at Ohio and Fifteenth streets, N. W. John S. Larcombe, Jr., has been appointed manager. Mack, Saurer and Hewitt trucks will be handled. This is the first truck concern to open a Washington branch.

Great Field for Light Delivery Wagons—C. F. Redden of the New York City branch of the Studebaker Corporation has made some investigation as to the field for light delivery wagons and claims that the merchants of small towns are finding the light delivery wagon much better than horse-drawn vehicles for delivery purposes. Mr. Redden predicts that $200,000,000 will be invested in automobile delivery wagons of less than 1 ton capacity in the next 2 or 3 years.



New model of Flanders 20 light delivery wagon



King car which gave a novel demonstration in Milwaukee

Benson Sales Manager of Studebaker—The Studebaker Corporation has announced the appointment of Ernest R. Benson as sales manager of the automobile division.

Marmon in New Zealand—Reimers & Roche, Auckland, New Zealand, after trying out the Marmon car on New Zealand roads, took the New Zealand agency for that car.

Club Will Give Parade—The Hornell Automobile Club, Hornell, N. Y., will co-operate with the chamber of commerce in making Old Home Week, July 1-6, a great success.

Will Manufacture Automobile Bodies—Automobile bodies will be manufactured in Richmond, Va., by the Richmond Vehicle Construction Company, recently organized in that city.

Supply House Has New Quarters—The Syracuse Auto Supply Company has opened its new salesrooms in South Warren street, Syracuse, N. Y., securing much larger quarters.

Studebaker in Burrell Building—The Studebaker Corporation has removed its branch office from 1054 Main street to the new Burrell Building, Main and Goodrich streets, Buffalo, N. Y.

Jersey Driver's Fee Only $4—In THE AUTOMOBILE of May 9 it was stated that the New Jersey driver's fee for cars of over 30 horsepower is $6. This was an error due to misinformation. The fee is only $4.

Honors to Hooper—Robert P. Hooper, president of the American Automobile Association, was elected a director of the Automobile Club of Philadelphia, in place of G. D. Linnerd, who has resigned on account of absence from the city.

Mitchell Change in Seattle—The Mitchell factory branch in Seattle, Wash., will be discontinued, and the selling of the Mitchell cars for the entire Northwest will be placed with the firm of Mitchell, Lewis & Staver. Bruce Brien will be the Seattle manager.

To Enforce Speed Limit—Chief Kimmins, of the Niagara Falls, Ont., police department, will enforce the automobile speed limit law owing to complaints by residents. Recently the speed limit within the city limits was changed from 10 to 15 miles an hour.

Show Committee Appointed—The show committee of the St. Louis, Mo., Manufacturers and Dealers' Association has been appointed. The committee is to make arrangements for a fall show at Forest Park Highlands. This show is to be held in the open air during Fall Festival Week.

Novel Truck Body Saves Time—A novel truck body is in use on a Longest truck in Louisville, Ky., that saves a great deal of time and trouble. It is called a unit-compartment side-dumping body, and, as shown in the accompanying illustration, the compartments may be dumped to either side single or as a whole.

Head of Case Company Resigns—Stephen Bull, one of the founders of the Case Threshing Machine Company, Racine, Wis., has resigned as a member of the board of directors in order to spend his declining years without business cares. Stephen Bull, grandson of the founder, was elected to succeed him as a director.

Orphan Parade in Buffalo—Preparations are being made by the Automobile Club of Buffalo, N. Y., for the seventh annual outing for the orphans. The local motor organization urges all members to assist heartily in this undertaking and to loan their automobiles for the parade. The outing will probably be held on June 10.

Temptation Guarded Against—The Automobile Club of Delaware County, Pa., has issued notification to automobilists that the organization purposes stationing officers on Chester pike, Baltimore pike, Providence road, the state road to Village Green and other points where there is temptation to use the roads as a race course.

Automobile Show at Lancaster—Plans are being made for an automobile and horse show to be held on the fair grounds at Lancaster, Pa., June 4, 5 and 6. Motor club members from York, Harrisburg, Reading and Palmyra will attend individually or in a sociability run. The club having the largest number of cars registered during the 3 days will be awarded a large silver trophy.

Gives Interesting Demonstration—Nustis Brothers, Milwaukee, Wis., agents for the King car, recently gave a novel demonstration with a car of that make. The body, fenders and equipment were removed and every part that was exposed had its name painted on it in large letters. The purpose of the demonstration was to show the car's simplicity of construction.

Automobile Incorporations

AUTOMOBILES AND PARTS.

BAINBRIDGE, GA.—Bainbridge Automobile & Construction Company; capital, $10,000, with the privilege of increasing to $50,000; to engage in the automobile business.

BROOKLYN, N. Y.—Brooklyn Delivery Company; capital, $2,000; to deal in automobiles and to conduct an automobile delivery business. Incorporators: Maurice A. Lynch, Charles E. McMahon, Eugene S. Lucas.

CAMDEN, N. J.—Bergdoll Car Company of Missouri; capital, $10,000; to build, construct, operate and prepare for market automobiles, etc. Incorporators: Frank R. Hansell, John A. McPeak, C. U. Martin.

CAMDEN, N. J.—Ceylon Company of New Jersey; capital, $3,000; to manufacture automobiles, carriages, wagons, etc. Incorporators: Howard L. Merrick, J. A. Kinney, William Williams, Thomas W. Shore.

CHICAGO, ILL.—Pullman Motor Sales Company; capital, $2,500; to manufacture and market automobiles and parts. Incorporators: Lawrence A. Copen, Charles Aaron, John W. Bissell.

CLARENDON, VA.—Ford Automobile and Truck Company; capital, $1,000 to $25,000; to manufacture, market and deal in automobiles, trucks, parts, etc. Incorporators: E. H. Bauer, W. W. Barnes, R. Gordon Finney.

EDGEWATER, N. J.—Steinbock Engineering Company; capital, $1,000,000; to manufacture automobiles, motorcycles, etc. Incorporators: E. J. Forhan, F. B. Knowlton, John McLaren.

RACINE, WIS.—Sieverkropp Engine Company; capital, $100,000; to manufacture motors for automobiles, motor boats, etc. Incorporators: H. R. Sieverkropp, Andrew F. Sieverkropp, Fred P. Sax.

ROCHESTER, N. Y.—Union Electric Car Company; capital, $5,000; to manufacture automobiles, parts, etc. Incorporators: Arthur McNall, Henry J. Schneider, Harry E. Fraemer.

ST. LOUIS, MO.—Weber Implement Company; name changed to Weber Implement and Automobile Company.

WILMINGTON, DEL.—Moon Motor Car Company of Philadelphia; capital, $100,000; to engage in the automobile business. Incorporators: L. T. Edwards, E. A. Edwards, J. M. Frerer.

WILMINGTON, DEL.—U-Nit Motor Car Company; capital, $100,000; to take over and operate some automobile patents. Incorporators: Edwin C. Reed, Thomas Grant, Charles G. Guyer.

GARAGES AND ACCESSORIES

BAYSIDE, N. Y.—Bayside Taxicab Company; capital, $5,000; to engage in the taxicab business. Incorporators: William Wagner, Charles B. Story, Charles Bonner.

BIRMINGHAM, ALA.—New Taxicab Company; capital, $2,000; to conduct a taxicab business. Incorporators: F. G. Check, M. Boshwitz.

BROOKLYN, N. Y.—Broadway Penn Garage, Ltd.; capital, $2,000; to engage in the garage business. Incorporators: Herman Goldstein, Mayer Kaplan, Hyman Meisel.

CHICAGO, ILL.—Packer Auto Specialty Company; capital, $2,500; to do a general automobile supply and merchandise business. Incorporators: William D. Bangs, Laird Bell, William C. Boyden.

CHICAGO, ILL.—Standard Auto Equipment Company; capital, $1,000; to manufacture automobile accessories. Incorporators: Milton Lowenthal, Edward B. Friedlander, Joseph A. Netzel.

News of the Garages

Sanderman in Business—W. S. Sanderman has started in business again, having opened a garage in Cambridge, Mass.

Fire Destroys Garage—Fire partially destroyed the Purcell Garage, Atlanta, Ga., recently. The loss was $33,000.

Wahl Establishes Garage—George Wahl, Cambridge, Wis., has established a garage in the Scobie building and will deal in tires and accessories.

Garage in Donaldsonville—A garage and repair plant for automobiles is being erected in Donaldsonville, by the Donaldsonville Garage Company.

New Garage for Patton—Cole Brothers have opened a garage, known as the Patton Automobile Garage, Patton, Pa. Buick cars will be handled.

Strimple Adds Garage—J. A. Strimple, agent for the Mitchell at Janesville, Wis., has taken over the Grover Horn Garage on North River street.

Fritz Establishes Garage—J. A. Fritz & Company has established a new automobile garage in the Garber building on East Lawrence avenue, Charlotte, Mich.

Diamond Erecting a Garage—The Diamond Electrical and Machine Works are having a large new machine shop and garage built on Railroad avenue, Pittsburg, Cal.

Centralia, Wash., Has Garage—Centralia, Wash., has a fine new garage. It is a concrete building on the Pacific highway.

Harrison Builds $90,000 Garage—H. O. Harrison & Company of Los Angeles, Cal., distributors of Peerless cars, have recently commenced the construction of a $90,000 concrete garage.

Automobile Incorporations

DOVER, DEL.—John G. Funk Combination Steel & Pneumatic Tire Company; capital, $200,000; to manufacture tires. Incorporators: W. H. Kiser and others.

NEW YORK CITY.—L. A. W. Carbureter Company; capital, $100,000; to manufacture automobile accessories. Incorporators: N. Leinau, S. Heineman, H. A. Watkins, Cos Cob.

HARTFORD, KY.—Hartford Automobile & Supply Company; capital, $1,000; to manufacture and deal in automobile accessories. Incorporators: Dr. L. B. Bean, J. H. B. Carson.

LONG BEACH, N. Y.—Driggs Oil Company; capital, $1,500; to deal in oils and other lubricants. Incorporators: William S. Driggs, Abraham Lodholz, Henry J. Frink.

LOUISVILLE, KY.—Citizens' Taxicab Company; capital, $10,000; to conduct a taxicab business. Incorporators: Charles T. Neale, Hermann Morris, William A. Thomas.

MANSFIELD, O.—Ideal Garage Company; capital, $6,000; to conduct a garage. Incorporator: A. I. Summerville.

NORTH PLAINFIELD, N. J.—Farmers' Garage; capital, $24,000; to conduct a garage and general automobile business. Incorporators: William H. Titus, N. H. Cleaves, George N. Winante, Charles C. Wheeler.

PITTSBURG, PA.—Automobile Supplies Company; capital, $50,000; to engage in the automobile supply and accessories business. Incorporators: Edwin N. Ohl, William C. Coffin, E. J. Taylor, J. E. Lauck.

RACINE, WIS.—Western Rubber Sales Company; capital, $25,000; to manufacture and sell rubber tires. Incorporators: T. P. Hardy, B. F. Crandall.

SAN ANTONIO, TEX.—San Antonio Automobile Clubhouse Company; capital, $6,000; to erect a club house. Incorporators: W. E. Milligan, W. J. Pearson, Dr. F. J. Fielding.

ST. PAUL, MINN.—Northwestern Automobile Training School; capital, $10,000. Incorporators: H. L. Bollum, B. J. Bollum, M. E. Braun.

TROY, N. Y.—Vanderheyden Garage Company; capital, $5,000; to engage in the garage business. Incorporators: William G. Pike, Eleanor M. Pike, Fred E. File.

TORONTO, ONT.—Canadian Automobile Association; capital, $50,000.

WESTWOOD, N. J.—Westwood Auto Garage Company; capital, $10,000; to conduct a garage business. Incorporators: Walter Beverally, A. H. Steel, Walter Halliday.

WILMINGTON, DEL.—Morrow Gasoline Vender Company; capital, $100,000; to manufacture and deal in machinery.

WILMINGTON, DEL.—Non-Skid Chain Company; capital, $250,000; to manufacture an anti-skid chain. Incorporators: Arthur C. Platt, Edgar Van Etten, Edward E. Johnstone, William J. Arkell, Harry W. Davis.

YONKERS, N. Y.—Yonkers Auto Repair Company; capital, $1,000; to conduct a garage and repair business. Incorporators: Herman Flader, Albert Kipfer, Elizabeth Kipfer.

CHANGES OF CAPITAL

CLEVELAND, O.—Cleveland Motor Truck Manufacturing Company; capital stock reduced from $250,000 to $1,500.

JOLIET, ILL.—Joliet Auto Truck Company; capital stock increased from $10,000 to $75,000.

Abbott-Detroit Opens Garage—The Abbott-Detroit Sales Company has opened its new garage at South Clinton street, Syracuse, N. Y.

Church Used as Garage—G. W. Woodland and C. W. Cowdin, Grand Rapids, Mich., have opened a modern garage in the old Christian Reformed Church at 50 Commerce avenue, S. E.

Campbell Automobile Company Moves—The Campbell Auto Company, Salt Lake City, Utah, has moved to temporary quarters at 527 South street, while awaiting the completion of its new garage and showroom on Fourth and South streets.

Belmont Hill Garage Opened—The Belmont Hill Garage at Malden, Mass., has just been opened. It is a brick structure of fireproof construction, 70 by 110 feet, and having a capacity for 60 cars.

Hall Company Erects Garage—Ground has been broken for the new Standard Garage, East Fifth and Broadway, East Liverpool, O., It is being erected by the Hall Real Estate Company and will cost $6,000.

Van Vechten and Reams Partners—P. V. O. Van Vechten and K. J. Reams have formed a partnership, purchased acreage and will erect a large garage and repair shop at once at Third and McIndoe streets, Waupun, Wis.

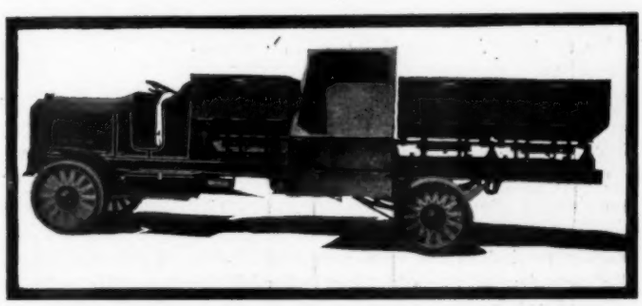
Adams Changes Stables to Garage—A permit has been issued by the Bureau of Building Inspection to Armstrong & Latten, to convert the stables of the Adams Express Company, Philadelphia, into a garage at a cost of $27,000.

St. Peter Purchases Building—Eugene St. Peter, Marinette, Wis., has purchased a building on West Front street and is remodeling it into a garage. He has the local agency for the Ford, Buick and Kisselkar.

Service Station with Garage—The Beekler & Ogden Motor Company are to have a fine service station in connection with their new garage and salesrooms on Lexington street, near Carey, Baltimore, Md. The company represents the Krit car in Baltimore and the state of Maryland.

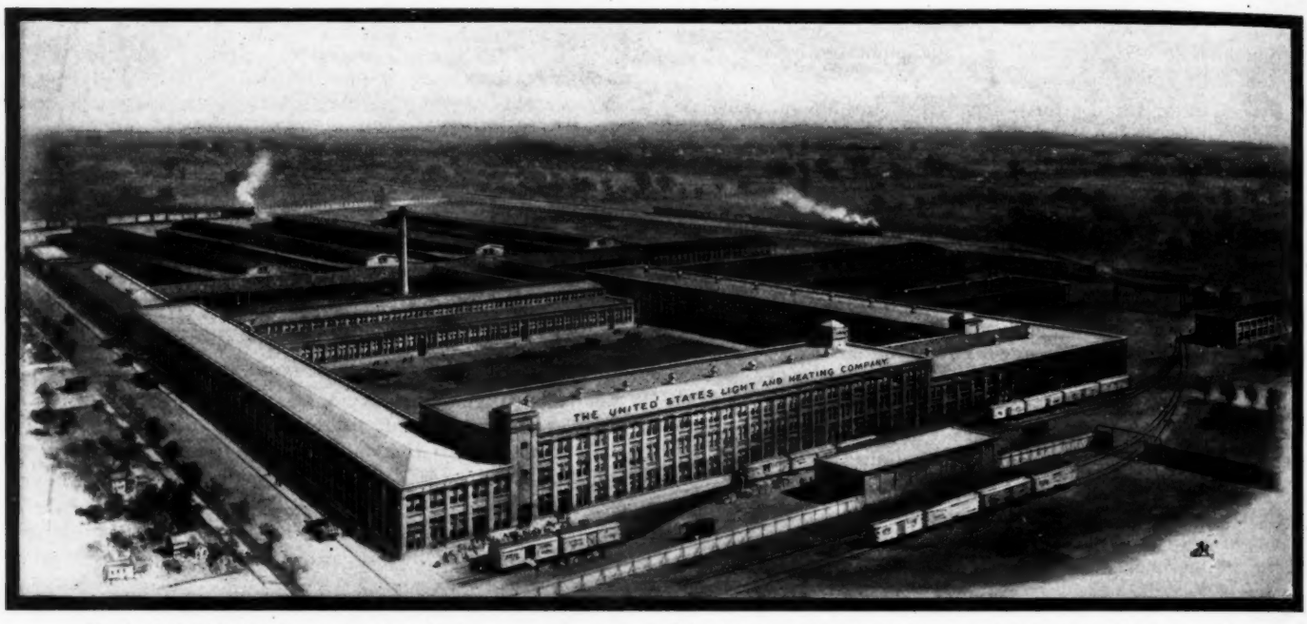
Limit on Gasoline Storage—The Common Council of Oshkosh, Wis., has adopted an amendment to the ordinance restricting the storage of petroleum products providing that "within the special fire limits of city of Oshkosh not to exceed 20 barrels of kerosene, carbon oil, or lubricating oil may be stored at any one time." The amendment was passed in spite of the strenuous objections of the big oil companies as well as jobbers and retailers in petrol products.

For Centralizing Garages—The district of Washington, D. C., upon the recommendation of the building inspector, has decided to amend the building regulations so as to permit the establishment of garages in squares already occupied by them without the consent of surrounding property owners. At present the law provides that the consent of 75 per cent. of the owners of property within a radius of 200 feet must be obtained in order to establish a garage. The amendment was ordered with a view to colonization of garages. It is believed that if garages are colonized, the objectionable features will be centralized and nuisances minimized.



Longest truck with compartment dumping body

Factory Miscellany



Plant of the United States Light & Heat Company, Niagara Falls, N. Y., where the U. S. L. starter and lighter is made

NOW Makes Eveland Starter—The United States Light & Heat Company, Niagara Falls, N. Y., has added the Eveland electric starter and lighter to its line. It is now called the U. S. L. starter and lighter. The plant of the company covers 7 acres and is fitted with very complete equipment. There are 7 acres provided for enlargement and additions to the factory have already been started. The general offices of the company are at 30 Church street, New York City.

Bower Company Buys Equipment—The Bower Rolier Bearing Company, Detroit, Mich., is purchasing $50,000 worth of new machinery and equipment to take care of increased business.

Cartercar Company Behind Orders—The Cartercar Company, Pontiac, Mich., is now running both day and night to catch up with its orders. It was planned to put out only 3,000 cars this year, but already far more than the number for the first 4 months have been delivered.

Economy Spring Outgrows Factory—The Economy Spring Company, Racine, Wis., has started work on the erection of a new plant on Wisconsin street. The company is only a few years old, but has had a remarkable growth and its present quarters are entirely inadequate.

Batenburg Appointed Superintendent—The Four Wheel Drive Auto Company, Clintonville, Wis., has closed a 3-year contract with Peter Batenburg as superintendent of its works. Mr. Batenburg has been manager at Clintonville since the company first began manufacturing.

Hupp Company in New Plant—The Hupp Motor Car Company's new plant at Milwaukee and Mt. Elliott avenues has received the finishing touches and the company is now thoroughly settled in the new location. It has more than triple the capacity of the old plant afforded, with a half mile of railroad track.

Four Wheel Drive Plant at Appleton—The Four Wheel Drive Automobile Company, Clintonville, Wis., has practically consented to locate its new permanent plant at Appleton, Wis., on the condition that Appleton capital buys $100,000 worth of the stock of the corporation. Not more than $10,000 will be allotted to any one man, however. The chances are that the proposition will be accepted by the Appleton Commercial Association.

Aluminum Company Leaving Manitowoc—The Aluminum Castings Company, Cleveland, O., the principal western plant of which is located at Manitowoc, Wis., has taken the first step in the proposed removal from that city by leasing its works in the Chicago & Northwestern Railroad Company for warehouse and storage purposes. Negotiations for the purchase of a large foundry plant in Milwaukee, commenced several weeks ago, have not been closed as yet. Conrad Werra, manager at Manitowoc, will become associated with the Cleveland or Dayton works. It is expected that Edmund E. Allyne, of Chicago, head of the company, will be ready to announce a decision in regard to the Milwaukee matter by May 20.

Ford to Have Milwaukee Plant—Milwaukee has been selected by the Ford Motor Company, Detroit, Mich., as the location of one of the three proposed assembling plants in various sections of the United States, according to announcement made by Isaac G. Hickman, president of the Hickman-Lauson-Diener Company, Milwaukee, state agent for the Ford. The company has leased the Courteen dock property on the Kinnickinnic river and will erect several factory buildings. Eight carloads of materials, enough for seventy cars, have already been shipped to Milwaukee. It is expected that the Hickman company will take a much larger territory for the 1913 season than it has at present. The concern is handling 3,500 to 4,000 cars in the Wisconsin territory for 1912.

Body Company to Increase Plant—The Racine Manufacturing Company, Racine, Wis., manufacturing automobile bodies and trimmings, has plans for two large additions to be built at once. The company is now one of the largest producers of bodies in the country and is capitalized at $800,000.

Government Buys More Trucks—The War Department has contracted for a 1 and a 2-ton Four Wheel Drive delivery car, made in Clintonville, Wis., which, with the 3 1-2-ton truck purchased last fall, will be used for further tests in the present series that is being conducted by the government. The Four Wheel Drive truck made an excellent showing in the recent test run from Washington to Indianapolis.

Body Plant for Windsor—Within the next week or two ground will be broken for a large plant to be built near Windsor, Ont., by the National Auto Body Company, Ltd., recently incorporated in Canada with a capital stock of $150,000. The main building will be two stories high, of brick, and 55 by 300 feet. The company will begin operations with about 100 men, manufacturing wood, steel and aluminum bodies.

Case to Have Big Foundry—The J. I. Case Threshing Machine Company, Racine, Wis., has started work on the erection of a $1,000,000 foundry plant adjoining its motor and car works at Lakeside, Racine. The construction work will be done by the Westinghouse-Church-Kerr Company, of New York. All of the company's foundry work will be done at the new plant, the present foundry department being used for manufacturing purposes.

Warner Company's Big Contracts—The Warner Instrument Company, Beloit, Wis., has closed a contract with the Willys-Overland Company to supply all of the 1913 Overland issue with Warner auto-meters. The contract ranges from 30,000 to 40,000 instruments. The Warner company recently closed with the Cadillac Motor Car Company for 15,000 meters. Additions are now being constructed to increase the capacity to 100,000 and more annually. The output in the past has been 25,000 per year.

Agner Company Is Organized—The Raymond C. Agner Company, Burlington, Wis., organized to manufacture several inventions of R. C. Agner, has been fully capitalized at $30,000 and will engage at once in manufacturing the devices, which include the Simplex adjustable spark-plug wrench and the Simplex grease and oil gun. The factory will be located in the former high school building. Edward Brook is president; Hugh Agner, secretary, and George Weiler, treasurer. R. C. Agner is general manager.

New Automobile Agencies

PLEASURE CARS

Place	Car	Agent
Atlanta, Ga.	Premier	Premier Sales Co.
Baltimore, Md.	Hupmobile	Chesapeake Motor Car Co.
Baltimore, Md.	Michigan	Michigan Motor Branch of Maryland.
Boise, Idaho	Cadillac	Norman Gratz.
Boston, Mass.	Paige-Detroit	Morse Motor Co.
Grand Rapids, Mich.	Alpena	Alpena Motor Car Co.
New Castle, Pa.	King	Jesse P. Moore.
New York City	Isotta Fraschini	Isotta Fraschini Motors Co.
North York, Pa.	Hupmobile	R. E. Jacoby.
Portland, Ore.	Little	F. W. Vogler.
Plainfield, N. J.	King	O. A. R. Motor Co.
Puyallup, Wash.	Ford	A. J. Williams.
Seattle, Wash.	American	American Motor Car Co.
Seattle, Wash.	Regal	Sears Motor Car Co.
Swift Currant, Sask.	Cartercar	MacEwan-Webster Auto Co.
Torrington, Conn.	Ames	Mutual Garage Co.
Washington, D. C.	Herreschoff	W. K. Gilmour.
Washington, D. C.	Hupmobile	W. E. Reed.

ELECTRIC CARS

Detroit, Mich.	Baker	Baker Electric Co. of Mich.
Salt Lake City, Utah.	Detroit	Salt Lake Automobile Co.

COMMERCIAL VEHICLES

St. Louis, Mo.	Hatfield	Marshall Brothers Livery Co.
Syracuse, N. Y.	Sandusky	W. R. Shaw.

Motor Fire Apparatus

Better Equipment for Columbus—The Columbus, Ga., fire department has received its new automobile combination fire engine, which was ordered several months ago.

Ginter Park's Fire Equipment—The Ginter Park Residents' Association, Ginter Park, Va., has voted to buy a $12,000 automobile fire engine similar to the one now in use in Richmond.

South Bend a Convert—The South Bend, Ind., fire department has installed a Rambler chemical wagon at the central station. It is the intention of the department to eventually replace all horse-drawn apparatus with the motor-driven type.

Fire Truck on Test—A 35-horsepower combination hose and chemical wagon built on a Wilcox truck chassis by the Minneapolis, Minn., fire department shop, on test reached a speed of 30 miles an hour downtown. It will be given a tryout for 2 months.

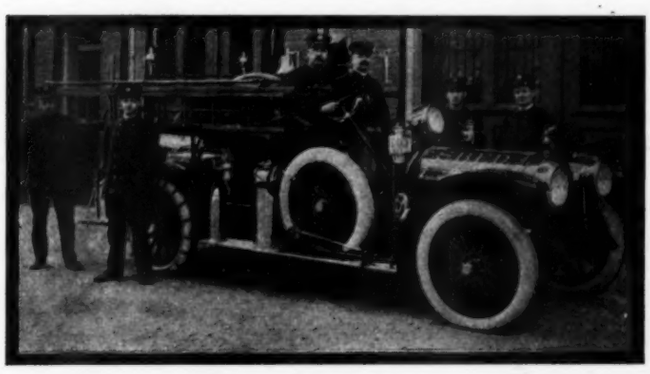
Likes His New Car—Chief Emerich, of the Baltimore, Md., fire department, has put his new White gasoline car into service. It replaces his old White steamer. He finds that he can make quicker starts and better time in going to fires with his new car.

Gorham to Make Fire Apparatus—The Gorham Engineering Company, Oakland, Cal., is planning an extension to its plant and will engage in the manufacture of automobile fire apparatus on a large scale.

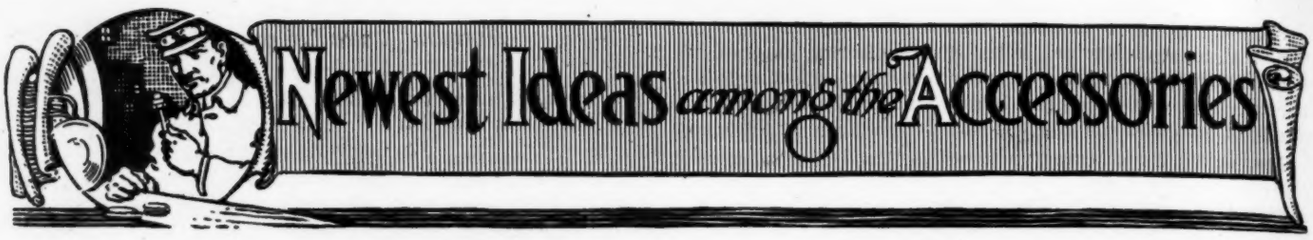
Albion Falls Into Line—The E. R. Thomas Motor Car Company, Buffalo, N. Y., has been awarded the contract for a combination automobile hose, chemical and ladder apparatus for the Dye Hose Company, Albion, N. Y. The new truck is a Thomas $6,000 machine with six-cylinder, 70-horsepower motor, guaranteed to drive the machine 60 miles an hour with full equipment.

Boston Studies Springfield Apparatus—Mayor John F. Fitzgerald and Fire Commissioner Cole, of Boston, Mass., made a trip to Springfield, Mass., recently to inspect the motor apparatus in use in that city for the purpose of arranging to get more motor apparatus for the Boston department. The City Council now has a recommendation from the Mayor asking that $50,000 be set aside for the purchase of motor vehicles to displace some of the horse-drawn vehicles.

Victor Gets Buffalo Contract—The Victor Motor Car Company, Buffalo, N. Y., has been awarded the contract for a combination motor chemical and hose wagon costing $4,850. Sixteen bids were submitted by various concerns. It is proposed to use the new chemical apparatus for quick work on incipient fires where delays in downtown districts might result in big conflagrations. This will be Buffalo's second motor-driven fire wagon. The new motor fire engine, recently installed, is proving highly satisfactory.



New Rambler fire-wagon in use at South Bend, Ind.



Meteor Acetylene Self-Starter; Colorado Fabric and Leather Non-Skid Tread; Tail Light Indicator; Shaler Vulcanizing Tool Outfit; Metallic Aluminum Floor Plate and Heel Support

HARDLY a week passes without bringing the announcement of a new self-starter, generally of the acetylene type. The latest product constructed along these lines is the Meteor starter, made by the Meteor Auto Tank Company, 1666 Broadway, New York City. It utilizes the acetylene tank for its gas supply and consists of a shut-off valve V, a distributer valve and priming cups, one on each cylinder, through which the gas is admitted from the distributer. The arrangement of the several parts of the starter system is shown in Fig. 1. The gas coming from the tank flows through a passage controlled by a needle valve V as far as the distributer, and is kept there ready for starting work. The distributer is shown in section in Fig. 2 and by a three-quarter view in Fig. 3. Passage of acetylene to the interior of the distributer is controlled by the needle valve N, which is threaded and guided by a fitting nut. The rotative movement, which is the direct cause of the longitudinal one, of the needle N is imparted to it through the handle H, which is pinned to the forked end F of the needle stem by means of the pin P. Integral with the handle-extension H1 is the steel disk D bored with a passageway S2 toward its periphery. The space adjacent to the point of the needle and the inner distributer space communicates through a longitudinal slot S bored in the peripheral portion of the needle stem. If the handle, and thereby the needle stem, is turned, the needle point is raised from its seat and acetylene flows through the slot to the inner distributer space and into the radial passageway S2, which, during the rotation of the needle and disk D, registers with each of the connections C1, C2, etc., admitting gas to the engine cylin-

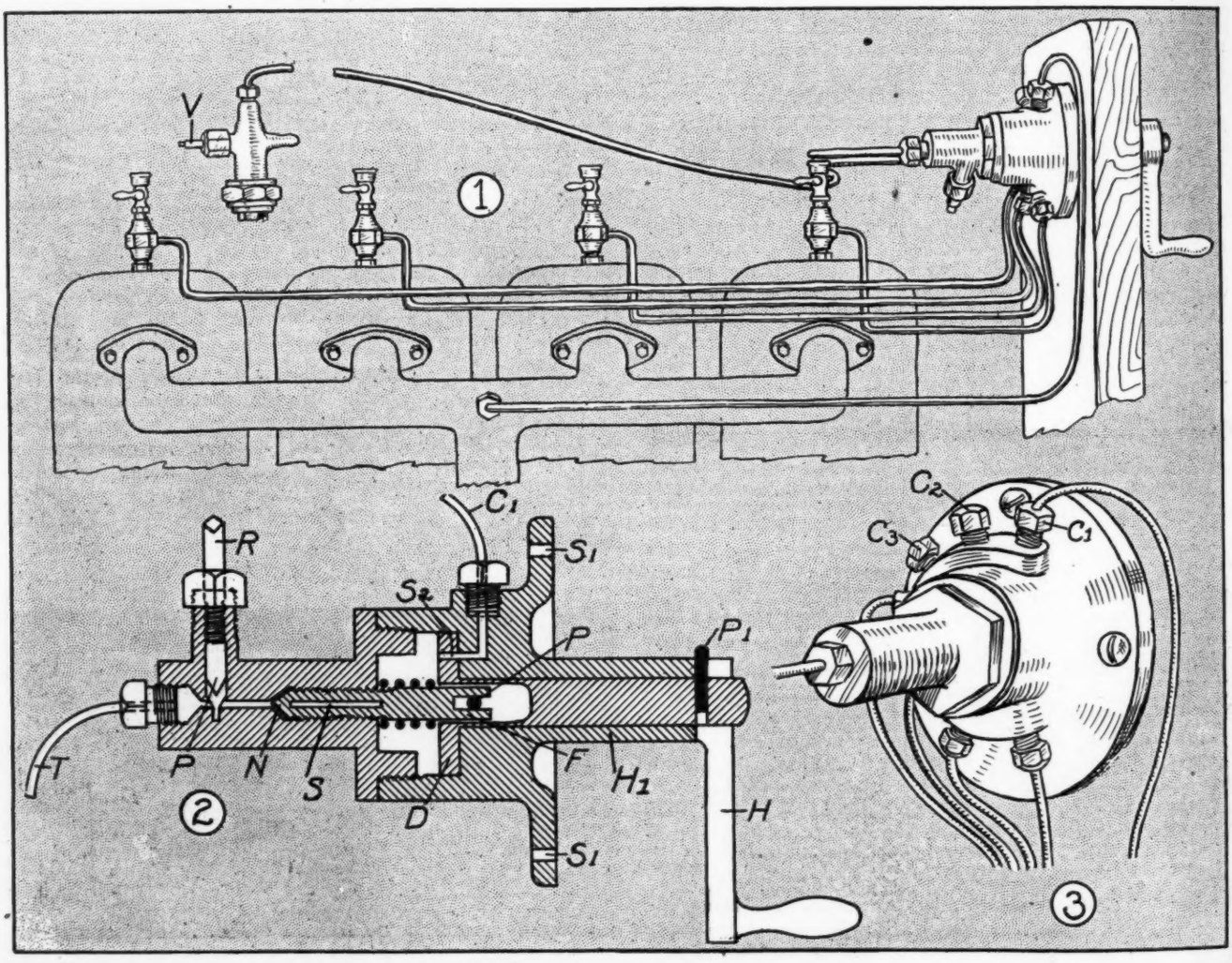


Fig. 1—Installation of Meteor starter. Fig. 2—Longitudinal section of distributer. Fig. 3—Three-quarter view of distributer

ders and to the side of the intake manifold. To accomplish this, the handle is given a full turn to the left and then one back to the right, which sends sufficient acetylene into the motor. The priming cups contain ball checks preventing the escape of gas from the cylinders. After the handle has been turned forward and back, the engine is started by throwing on the spark. The device is attached to the dash-board by means of screws passing through the holes S1.

Colorado Durable Tire Tread

Several original features characterize the Durable tread made by the Colorado Tire & Leather Company, 1025 Broadway, Denver, Col. The most important point in favor of this non-skid tread is that it cannot possibly slide on the tire, thus taking the driving strains directly from the rim and relieving the tire of all but the weight-carrying and spring work. The Colorado Durable tread of the Full-Cover type, Fig. 5, is built as follows: Its base is a protector leather P, made of one piece of chrome leather tanned to make it very pliable. On the protector leather fabric layers F, varying in accordance with the tire size from 3 to 5 in number, are so placed as to give a base for the tread T. The latter is also made of chrome leather tanned to give great resistance against wear. Fabric and tread are fastened to the

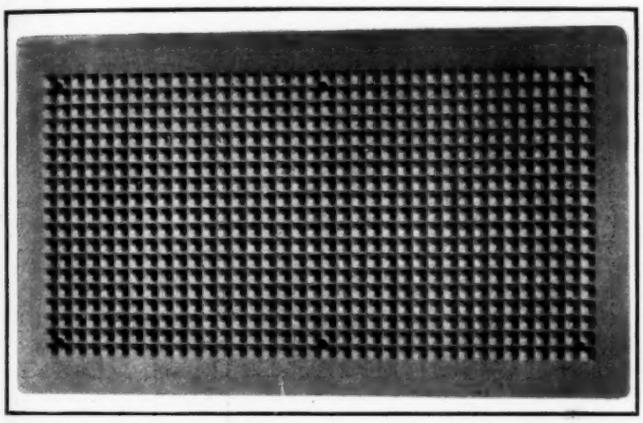


Fig. 4—Metallic aluminum floor plate and driver's heel rest

protector leather by ½-inch rivets which are clinched at their ends. These rivets give a strong non-skid effect, and at the same time hold the various layers of the tread strongly together. Protection of the tire-casing surface against the ends of the rivets is afforded by a strip of leather lining L, running along the rivet-studded portion of the protection leather. The total thickness of the tread is thereby brought up to 1-2 inch. The tread is fixed to the rim by means of the patented hook H, which snaps into the clincher portion of the rim.

Cowles Rear Direction Indicator

Among the numerous devices intended to inform the driver of a car following of one's intention to stop or turn to either side, the Rear Direction Indicator, made by C. Cowles & Company, New Haven, Conn., is distinguished by its simplicity. The whole outfit, which is operated by battery current, consists of a three-button switch and a signal box; the buttons of the switch are marked with the words right, stop and left. As any button is pressed, the word printed beside it appears clearly through the red glass plate on the signal box and remains visible as long as the button is pressed. The signal box is attached by bolts to the rear cross-member of the chassis frame, taking care that the bolts used are strong enough to sustain the weight of the box. The button switch board is fixed to the steering wheel.

The Shaler Tire Vulcanizing Kit

The C. A. Shaler Company, Waupun, Wis., is manufacturing a tool-kit containing accessories to be used in connection with a vulcanizer repair. The kit, which is made of Chase leather, and the accessories which it contains are shown in Fig. 6. These

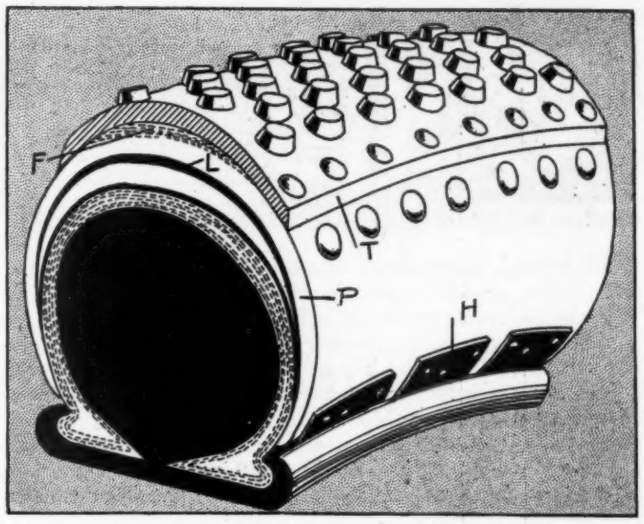


Fig. 5—Colorado Durable full-covered tread studded with rivets

tools are: A pair of plug pliers to be used in inserting para rubber in case of a tube repair; a vulcanizer's probe, being a pointed tool for cleaning the dirt out of a casing wound to be repaired; a roller which is used for smoothing down the canvas when blowouts are repaired; a rubber roughener for scarifying the surface of a tire before cement is applied to it; a knife with a Jessop-steel blade; a pair of 8-inch snips to be used in cutting rubber sheets or fabric; a stitcher for pressing the para rubber into the wound and a cement brush, made with Chinese bristles. The leather case is 10 by 3 inches.

Metal Automobile Floor-Plate

A very neat aluminum foot rest, Fig. 4, is manufactured by the Metallic Automobile Matting Company, Rochester, N. Y. In addition to thus supporting both his feet, the plate also protects the linoleum which is frequently used as automobile floor covering. The plate is fixed to the floor-board by means of six screws.

Fig. 6—Shaler vulcanizing outfit. Chase leather case and tools

Patents Gone to Issue

INTERNAL Combustion Motor—In which gas and air are held in separate compartments and mixed when being sucked into the cylinders through suitable conduits.

This patent refers to an engine construction, Fig. 1, in which the cylinders are arranged in pairs. In each combustion chamber a fixed sleeve S is attached to the walls. Sleeve and walls form an annular chamber which is divided by an enlarged portion of the working piston into two compartments, A and G. Means are provided for supplying a gaseous fuel to compartment G and air to compartment A of each cylinder. The air compartment of each cylinder is cross-connected to the gas compartment of the other cylinder by means of conduits C and C1. Between these conduits and the combustion chambers, conduits C2 and C3, controlled by valves, are provided. They are so constructed and placed that on the suction stroke of each cylinder a charge of gas and one of air are simultaneously drawn into the combustion chamber. While the mixture is compressed there, independent charges of air and gas are transferred to cross-connections C and C1 and prepared to be drawn into the cylinders on the next suction stroke.

No. 1,025,439—to Harry Whidbourne, Plymouth, and John James Lishman, Salcombe, England. Granted May 7, 1912; filed August 24, 1911.

Fluid Spring—Cylinders filled with a fluid contain movable pistons supporting the automobile body.

This patent refers to a construction comprising axles with overhanging supporting bars fixed thereto. A tank is suspended from the overhanging bars, and a cylinder is dependent in the tank. Pistons reciprocate in the cylinder and are adapted to be directly supported by the fluid in the cylinder, at the same time presenting a movable support for the body of the vehicle.

No. 1,025,315—to Frank Schreidt, Mansfield, O. Granted May 7, 1912; filed February 20, 1911.

Spring Wheel—In which the rim is formed by a series of leaf springs.

This patent refers to a wheel construction, Fig. 3, composed of a hub, spokes and a felloe. A number of leaf springs have their outer ends fastened to the felloe and their inner ends to the spokes. The springs have intermediate bent heel portions, in which the leaves are normally spaced. Between the heel portions are placed reinforcing spring leaves which are shorter than the main leaves.

No. 1,025,343—to Horace Villiers-Stuart, Louisville, Ky. Granted May 7, 1912; filed October 8, 1909.

Dirigible Automobile Lamp—The headlights are mounted on standards which swivel harmoniously with the movements of the steering cross-rod and knuckle.

The mechanism described in this patent comprises rotatably mounted lamp standards S, Fig. 2, the lower ends of which are connected by means of C, which are in direct connection with the steering mechanism. On the upper end of each standard a lamp is removably mounted, and a holder to which an annular flange F is attached. A retaining member H has resilient bowed arms to embrace the above-mentioned holder. The retaining element is held yieldingly in the position shown and is moved in the same sense as the part C, when the front wheels are turned.

No. 1,025,602—to Thomas G. Wilbraham, Alloway, N. J. Granted May 7, 1912; filed January 6, 1912.

Engine Starter and Indicator—In which a rotating cylinder valve is used to regulate the flow of the starting mixture into the motor.

The gas engine starter described in this patent consists of a body which has a longitudinal bore, on the upper side of which a series of lateral chambers communicating with the bore are located. Pistons P which slide in these chambers carry heads H which serve as indicators for the position of the pistons in their chambers. A rotatable plug valve V is in position in the bore and has transverse passages cut through it, each being formed by communicating ports which have T form. The bored body has also lateral passages in which pipes E leading to the cylinder combustion chambers are secured. Tubes T are so connected to the starter body as to communicate with openings in the latter, which register with the plug passages. Pet-cocks K are contained in the tubes, and each tube has one end in a common manifold which is connected to a supply of a combustible gas mixture.

No. 1,025,762—to George Edward Ocain, Oak Park, Ill. Granted May 7, 1912; filed February 17, 1911.

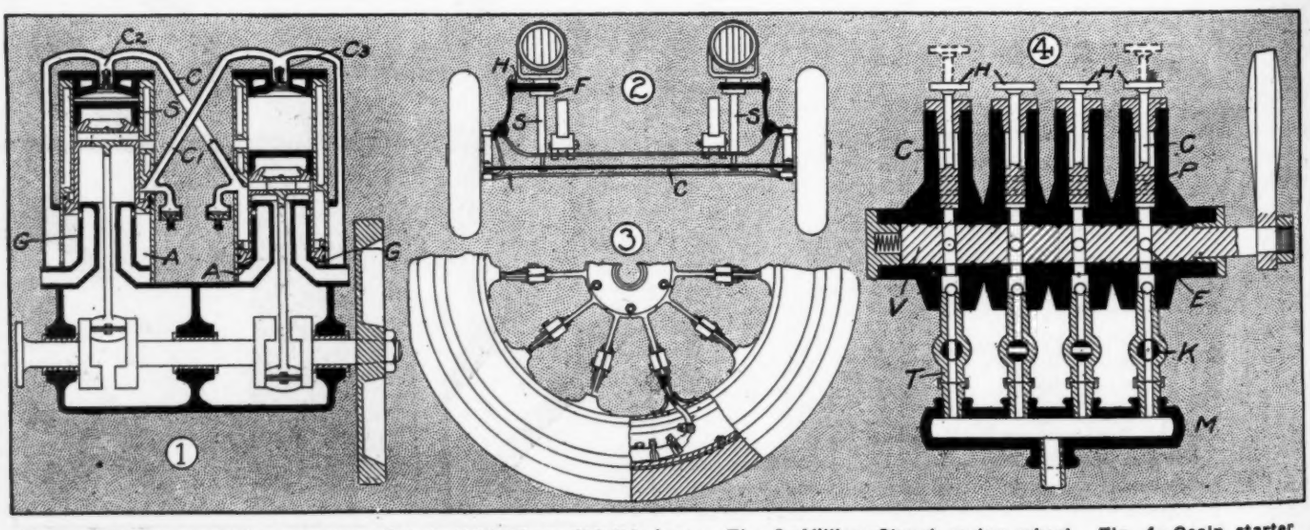


Fig. 1—Whidbourne-Lishman motor. Fig. 2—Wilbraham dirigible lamp. Fig. 3—Villiers-Stuart spring wheel. Fig. 4—Ocain starter